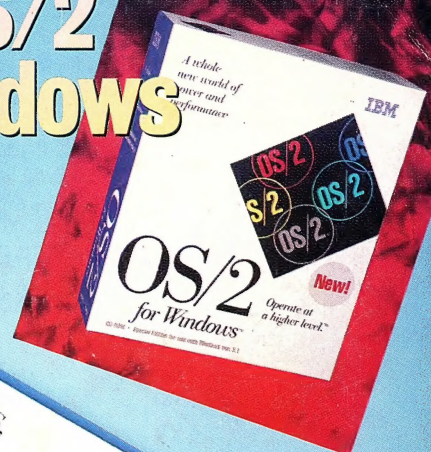


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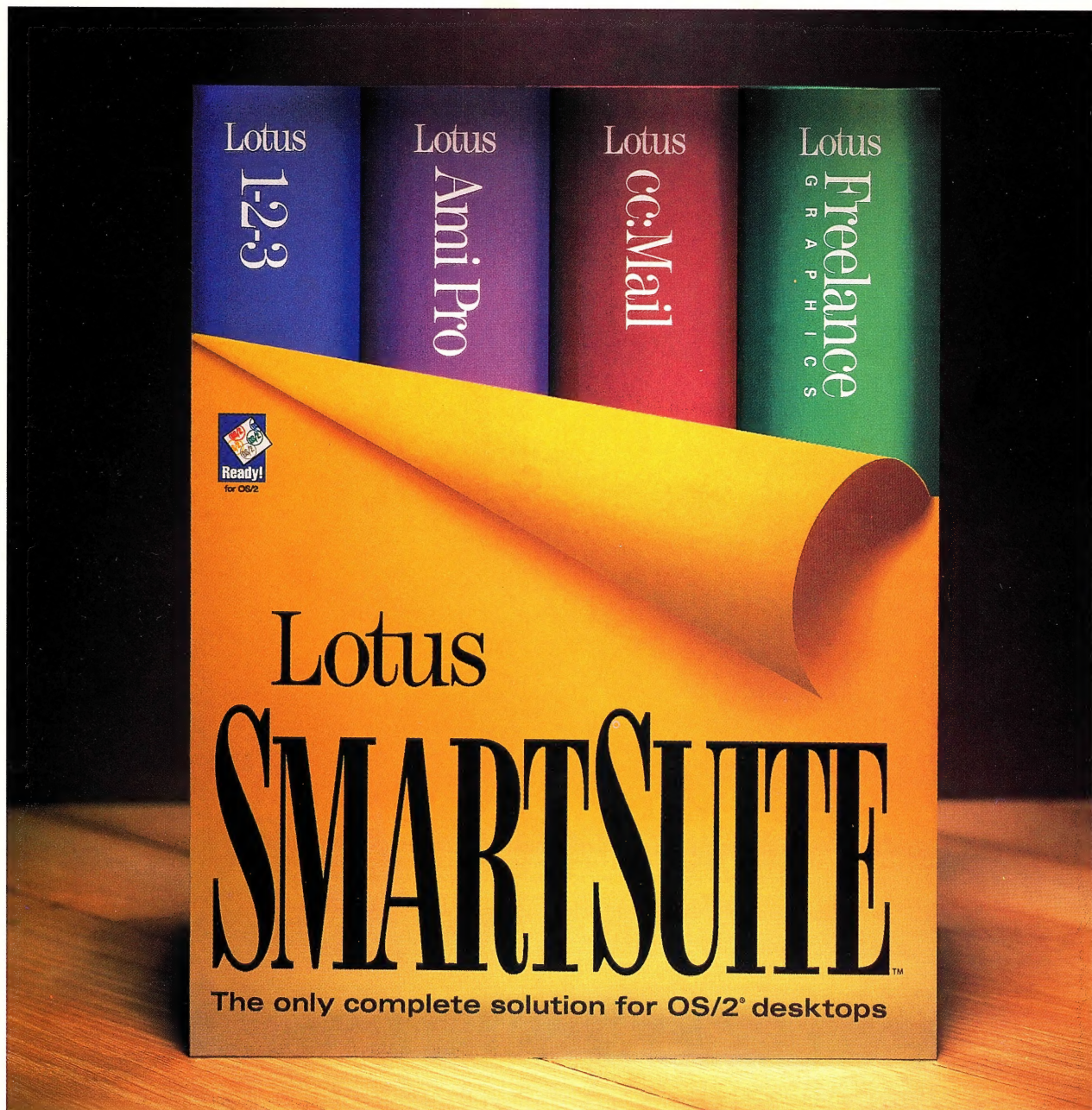
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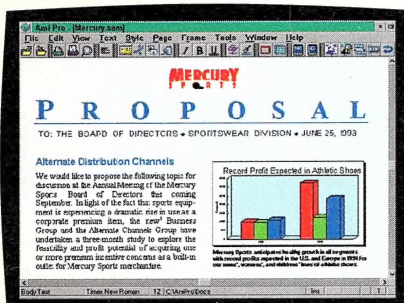


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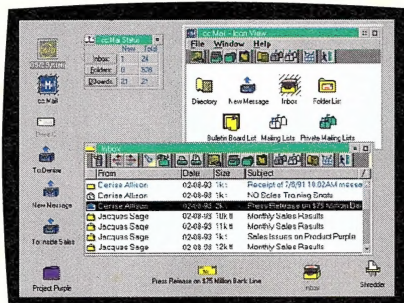
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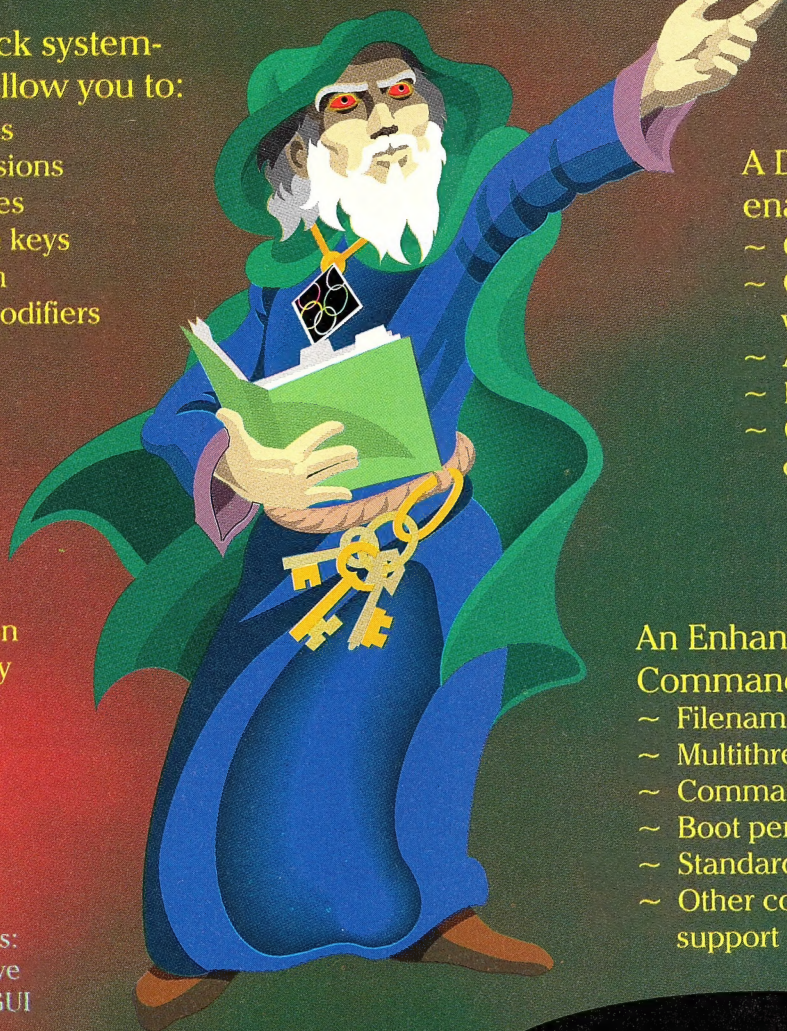
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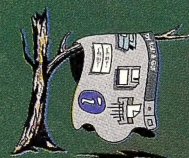
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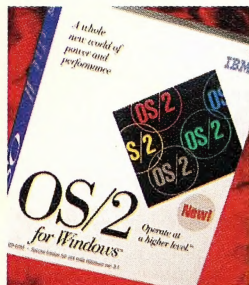
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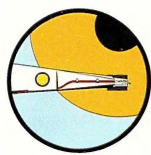
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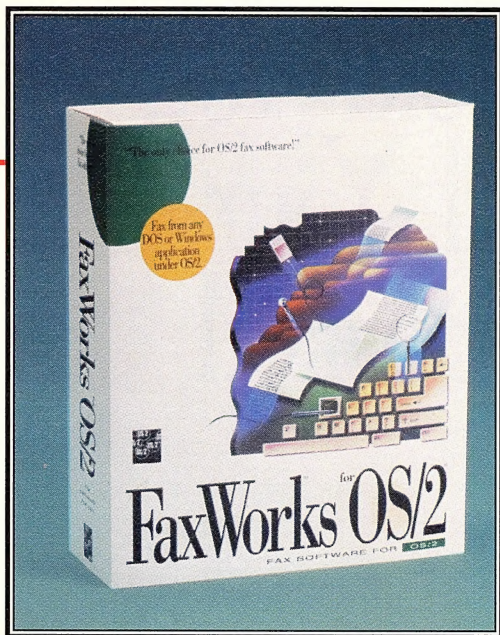
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Perspectives

Driving Miss Video

WHY IS IT SO DIFFICULT TO USE OS/2 2.1 AT ANYTHING GREATER THAN ORDINARY VGA?

Since last summer, I've installed OS/2 2.1 (and now, OS/2 for Windows) perhaps 20 times on half a dozen different computers. Occasionally, the installation goes flawlessly; but usually I've experienced some problem or another. Most of the time, it's easy to fix. But then there's video, which has been a source of considerable frustration on many machines. The usual solution is to repeatedly call tech-support lines at IBM or the board manufacturer (each of which usually says that it's the other's problem), or scouring vendor or private BBS databases for drivers.

Let's take one of our lab computers, a utterly reliable 33MHz 486DX. When I first upgraded this machine from OS/2 2.0, it had an older Sigma Designs Legend VGA board. The Legend is based on the Tseng Labs ET4000 chipset, with 1MB video memory, a fine combination that supports Windows at 800 x 600 x 256 and 1,024 x 768 x 16. The best OS/2 can do is 640 x 480 x 256 or 800 x 600 x 16.

On a generic 33MHz 386DX, we installed one of National Design Inc.'s Volante Warp10 graphics accelerators, based on the S3 86C801. Under Windows 3.1, this board worked at 640 x 480 x 64K, 800 x 600 x 64K, and 1,024 x 768 x 256. But under IBM's OS/2 S3 drivers (downloaded from CompuServe), offered only two modes, 640 x 480 x 256, and 800 x 600 x 16. That is, when the drivers worked—often, the system decided to boot into gibberish and we had to reload the S3 drivers. That was frustrating, to say the least, especially since when we wanted to use that PC for picture editing or viewing, we needed to run Windows in one of the 64K color modes.

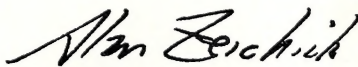
But wait, there's more! When OS/2 for Windows came out, I wiped the 386's hard drive, loaded PC-DOS and Microsoft's Windows, and then installed OS/2 for Windows. No problems here, until I went to load the S3 drivers that the disk

included (but not documented, by the way). The recommended installation procedure told me that my *only* display option with the Warp10 board was 640 x 480 x 256—and booted into a gibberish display. I tried this several times, including reinstalling OS/2, with the same result.

Then, just for fun, we tried Selective Install and, after it ran, the system settings notebook offered me *three* choices for my board/monitor combination: 640 x 480 x 256, 800 x 600 x 256, and 1,024 x 768 x 256. At least we have a 256-color Workplace Shell at higher resolutions, but Windows is still necessary for obtaining greater color depth.

Then there's the new Compaq Deskpro 66M, with a Compaq's own Qvision display board. OS/2 2.1 doesn't contain drivers for Qvision (which is odd, considering Compaq's popularity in many corporate accounts that IBM is targeting for OS/2 sales). I found Qvision drivers on the Hobbes CD-ROM—but I have not yet been able to make them work reliably. So, this high-power system, complete with 17-inch monitor, is locked into 640 x 480 x 16 mode, at least for now.

I'm not alone with these problems. At user group meetings and on electronic forums, I've seen and heard complaints from many dozens of OS/2 users frustrated by video driver inadequacies. If you're one of those OS/2 users: You're not alone. And, if you work for IBM: Making video work is *your* problem. Make the OS/2 2.2 driver support match the video boards' capabilities! Otherwise, many people will keep running Windows because they need high-end graphics—and they might forget to switch back to OS/2.

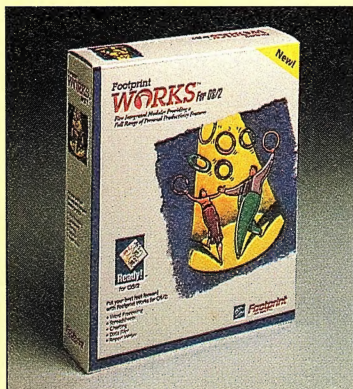


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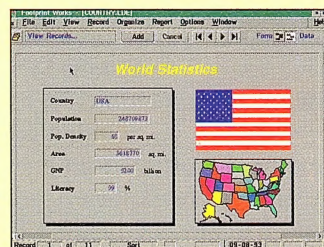
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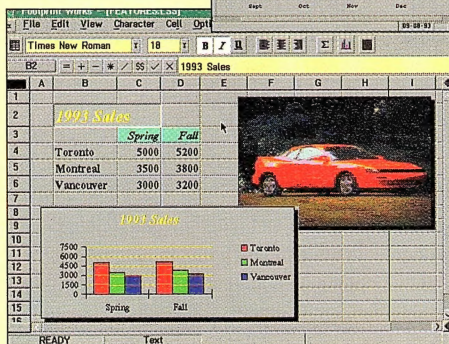
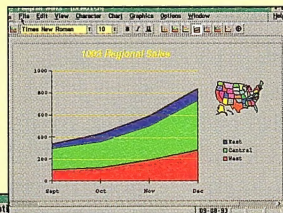
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Letters

The Scanman Affair

Dear Editor:

Matt Trask mentioned in his Migration Path column that he had gotten a Logitech Scanman 256 to work in standard mode (OS/2 Magazine, Premiere, pp. 83-86), but neglected to mention how. Could you please obtain this information for me?

Carlos Dominguez
(via CompuServe)

Here's how we got the Logitech ScanMan 256 to operate in standard mode:

1. Create a new WPS object for your Ansel or PhotoTouch Windows program by choosing "Create another" on the Program template. Assign the necessary program and path name to the new object.
2. With your mouse, select "Open Settings" and select the "Session" page of the Settings notebook. Click on the Win-OS/2 Settings button.
3. Verify that the WIN_RUN_MODE setting is 3.1 Standard, not 3.1 Enhanced Compatibility. This is necessary to prevent the scanner driver from trying to load its VxD driver.
4. Under the DOS_DEVICE setting, copy the line from your DOS config.sys that was created by the Logitech installation program. For example, if your DOS config.sys contains device=c:\scanman\hhscand.sys /a=2a0 /a=2a0 /i=7 /d=1, copy everything after the device=

into the DOS_DEVICE dialog box. If you wish, the entire statement can be copied into your OS/2 config.sys but it will use up memory in every virtual DOS machine.

5. Run your new program.

-Matt Trask & Alan Jay Weiner

Note that the Scanman 256 used by Mr. Trask in his Premiere-issue column was an older version. The current version of the Logitech Scanman 256 with 16-bit ISA card interface has a Windows driver only, and does NOT work with OS/2; the new Scanman does not use hhscand.sys, and will not complete the installation procedure in standard mode correctly. It will install in enhanced mode, but will not run. Our thanks to Donald Thompson of the Miami OS/2 Users Group for helping to track down this problem.

-Editors

Plain Gray is Good

Dear Editor:

I liked [Brian Proffit's] OS/2 Magazine article, and will be passing it around to people I know who are sitting on the fence, including my boss. I disagree, however, with the idea that the plain grey OS/2 background is a poor choice. Since reading the article on how to change the background, I've been able to resist the urge to go play with the system settings. Every time I change the background, I change back to default within a day, either because the new background clashed with some of my icons, or the titles became hard

to read. That's not too good for productivity, in my opinion.

When I am showing OS/2 to others, I use an empty folder, with its background set to the OS/2 logo. While I am waiting for someone to ask me about OS/2, I keep it maximized, but hiding it and getting back to my plain grey desktop is just a button click away.

Rick Widmer
via Compuserve

Errata

On page 16 of Dick Conklin's column (OS/2 Magazine, Premiere, p. 16), the phone number listed for OS/2 2.0 has been disconnected.

On pages 60-61 of Alexander Antoniades' video driver article (Buyer's Guide, pp. 59-62) the table should have been more clearly labeled. The first set of resolutions refers to the Workplace Shell drivers, and the second set of resolutions refers to the full-screen Win-OS/2 drivers.

In "The REXX Column" (OS/2 Magazine, Premiere, 77-81) the last line of the programming example on p. 80 should read:

```
say 'x='x';x*x='x*x
```

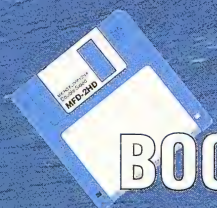
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IBM Beta Testing Update to OS/2

THE OS/2 2.1 SERVICE RELEASE BY ALEXANDER ANTONIADES

IBM is currently beta testing a set of OS/2 2.1 bug fixes, slated for release in the first quarter of 1994. The bug fixes will come in the form of a new release of OS/2 that will be referred to as the Service Release. Previous CSDs (or corrective service diskettes—what IBM euphemistically calls bug fixes) of OS/2 have added new features, apart from correcting bugs. But this new release is designed only to improve performance. The Service Release will apply only to the OS/2 2.1 general release, not to OS/2 for Windows.

Over 550 bugs were reported by individual and corporate users to IBM, which will be addressed in the Service Release. A complete list of the bugs is available directly from IBM in the form of a file called *betaap.txt* at the on-line beta feedback locations—on CompuServe in the PSP-BETA forum, on Prodigy through the “Beta Feedback” topic of the OS/2 Club, in the IBM OS2BBS OS2BETA Forum, and on the Internet at *software.watson.ibm.com*. The file contains a list of APARs (Authorized Program Analysis Reports)—the forms IBM uses to officially document bugs.

The fixes range from swatting bugs in the operating system, such as the overlapping shutdown messages, to improving compatibility with specific programs, such as Lotus Notes and Microsoft Excel 4.0, and correcting general quirks in the operating systems, such as not being

able to open more than 82 concurrent sessions. Other noteworthy fixes include transferring customized icons when session settings are changed, fixing bugs in HPFS, and improving network support.

The Service Release adds device drivers that didn't make it into the original OS/2 2.1 release. The beta version we saw had new display drivers for video boards using the S3 86C801/805/928 chipsets. These drivers are of special interest because they feature color depths of 65,536 colors in SVGA resolutions and even 24-bit color in 640x480 mode. A variety of CD-ROM drivers have been added including drivers from Creative Labs, Chinon, IBM, Mitsumi, NEC, Panasonic, Philips LMS, Sony, and Texel. In addition, Hewlett-Packard's LaserJet 4P and LaserJet 4MP printers will be supported.

The Service Release will include the OS/2 multimedia bug fixes from the MMPM/2 1.1 CSD which was released in December, 1993. These fixes include better VDM (Virtual DOS Machine) support for both Creative Labs and Media Vision sound cards, improved video playback, and better CD-ROM performance.

Based on the tire kicking we did with a beta version of the Service Release, it seemed stable, but understandably still had some problems. Installing the beta from one of the newly added CD-ROM drivers went off without a hitch, although it did

install *two* CD-ROM drives when there was actually only one. It was annoying that the Mah Jongg game was *still* not integrated into the normal installation routine and the MMPM/2 CSD was not integrated into the regular MMPM/2 installation, although a disk image was included on the CD-ROM. We applaud IBM, however, for including the S3 drivers, because this company has taken such an aggressive stance on providing better driver support for OS/2 and we hope to see this trend continue.

Despite our good luck with this beta version, judging by the comments in some of the on-line beta feedback locations, the release was still in beta for a good reason. Problems with the new video drivers, DOS compatibility, and stability of the Workplace shell were reported and for some reason the beta won't install on machines with 20MB of RAM.

Hopefully, IBM will be able to address the old bugs without creating a host of new ones. Regardless of the stability of the final version of the Service Release, it's important to remember that it doesn't contain any new features. If none of the bugs addressed by this release are currently a problem for you, you can probably skip this upgrade.

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What does 32-bits buy?

WELL, PRODUCTS LIKE AMIPRO AND CA-REALIZER BY AMY D. WOHL



Windows NT has caused (or so it seems) a rise in the fortunes of OS/2. It's as if many people who were waiting to see what Microsoft's new and powerful 32-bit operating system could do took an initial look and said, "Oh, yes, it's a new 32-bit operating system. It's okay to buy one now, but we'd rather have an OS that's a bit more mature." OS/2 was in just the right spot to collect the market votes.

Both Windows NT and OS/2 2.1 are 32-bit operating systems, but what does 32 bits buy? To a large extent, it's not what the operating system offers (it's just an enabling platform), but rather what qualities the application may implement. Application software has always been a sore spot for OS/2. It's an advantage that OS/2 2.1 runs Windows software well (better than Windows NT, says IBM, although Microsoft does not agree), but this very advantage may also be a disadvantage.

Once developers realized that they could write once—for Windows—and deliver twice, to both the Windows and the OS/2 market, they became less inclined to write OS/2-specific software. This problem has been further exacerbated by OS/2's slow ramp and by the pressures exerted on developer resources by all of the competing platforms, from Windows to Macintosh, from OS/2 to Windows NT, and from every flavor of UNIX. WordPerfect, for instance, has decided not to ship the

new version of its OS/2 product (although it will continue to support an older version).

This means OS/2 users lose. They get some benefits by running Windows software under the OS/2 32-bit operating system (such as protecting each session from interruption by a crash in another unrelated session, my least favorite Windows "feature" and multitasking), but Windows software does not exploit OS/2-specific features such as multithreading or the Workplace Shell GUI.

Recently, however, OS/2 users have been getting some good news. Some of the long-promised OS/2 software is arriving at last. Lotus has announced its award winning AmiPro 3.0 product for OS/2. This first-class word processor is:

- Integrated with the IBM Workplace Shell for OS/2, offering a full GUI drag-and-drop interface. The interface is compliant with the CUA-91 user-interface guidelines, making the product feel like a "real" OS/2 application. Among other things, the notebook controls are used and mouse controls are identical with the OS/2 standards.
- It supports multithreading, which permits the application to perform functions in the background while the user interacts with other tasks. This ability effectively speeds up throughput, especially for such tasks as repagination.
- It supports the High Performance File System (HPFS), with file

names of up to 254 characters—no more eight-dot-three names!

In addition to an OS/2 version of their Ami Pro word processor, Lotus also announced the Lotus Smart Suite for OS/2. This set of desktop applications includes 32-bit versions of AmiPro, 1-2-3, Freelance Graphics, and cc:Mail. All of the applications exploit the OS/2 2.1 Workplace Shell GUI and other 32-bit technology including multitasking and multithreading. 1-2-3, Freelance, and AmiPro use DDE (but not OLE) to link applications, allowing charts or data to be updated on the spot, rather than having to open and close multiple applications. Applications are mail-enabled for cc:Mail (which is part of the Smart Suite) as well as Lotus Notes.

Since WordPerfect doesn't offer a suite approach and Microsoft is no fan of OS/2, the OS/2 suite market seems to be left clear for Lotus—no doubt an issue for them in prioritizing resources for product development. Of course, with more than two million new OS/2 users in the last five months, OS/2 is now a big market, so Lotus may only be lonely for a little while.

Lotus isn't the only vendor interested in the OS/2 market. Another strong supporter is Computer Associates, which should come as no surprise, since CA's mainstream business is selling systems software to Big Blue Shops. Computer Associates fields a full set of OS/2 productivity applications,

The Big Picture

but its most interesting contribution to the OS/2 market is a development tool called CA-Realizer.

Perhaps the most important feature of CA-Realizer is that programs written in its BASIC development environment may be written for either Windows or OS/2 and then recompiled for the other without modification. An Information Services environment that needs to code to both platforms would only need to write the application once. This feature, in itself, is an important argument for using CA-Realizer.

CA-Realizer's approach to GUI coding is entirely different from Visual Basic. You can use CA-Realizer to mask the event-driven nature of OS/2 and write more traditional, procedural code. This ability makes it easier for traditionally trained programmers to code for the OS/2 environment, yet produce real OS/2 programs. It is also possible to use the FormDev visual interface, which uses drag-and-drop ele-

ments to create the GUI, creating CA-Realizer code automatically. The programmer can then integrate this code with other code, revise it, or simply use it. Visual and procedural code can be viewed simultaneously to make it easier to understand the program as it evolves.

In an ideal world, applications software would be available as soon as an operating system enters a market. In the much tougher real world, applications software is often several years behind the operating system because applications programmers cannot begin their work until they have knowledge of the underlying operating system. Often, they are waiting for market signals indicating that the operating system will succeed and that investments in applications for this environment will be rewarded. The market is signaling loud and clear. OS/2 has come of age and the market will reward the software developers who have good application

programs ready for OS/2 users.

Amy D. Wohl is president of Wohl Associates, a consulting firm specializing in office information systems, personal computing, and end user computing. She is also editor of the Trendsletter, a monthly newsletter on computer industry trends.

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FOOTPRINT WORKS 1.0 AND ZIP/UNZIP BY BRIAN PROFFIT



FOOTPRINT WORKS 1.0 FOR OS/2

Footprint Software

We've all heard the saying, "Jack-of-all-trades, master of none." Well, a number of attempts have been made to put together an application that includes the most common office functions under a single umbrella. In every case, though, it seems that either all aspects are mediocre, or one piece—such as the spreadsheet portion of Lotus 1-2-3—dominates the others into non-existence.

This History has led to the popular wisdom that a package must focus on one task, and that the best approach is to buy a suite wherein the separate groups work to make their individual products communicate smoothly. Does Footprint Works dispel this notion? Well, not entirely. But for a large group of people, it may be the only product they need.

Footprint Software has crammed onto five diskettes a set of functions you might expect from five different applications of several diskettes each. The word processor, spreadsheet, database, report writer, and chart functions may not be as full of function as the top of the line product in each category, but they cover the functions most people need.

One of the key benefits of this approach is the consistency of the user interface. No matter which component is being used, the inter-

**The word
processor in Footprint Works
doesn't have some of the
features you find in DeScribe,
WordPerfect, or AmiPro. But
how often do you use options
like an equation editor?**

face is the same. The user knows where to go to change the font, whether he's writing a memo, designing a report, or laying out a database form. This ability is underscored by a chapter in the documentation called "Common Procedures." These procedures have to be documented in only one place for all of the parts of Works. That chapter saves a lot of learning/training time, as well as the time saved because the user no longer needs to flip through several books to figure out how to make things work. The Draw Palette, a movable bar allowing access to drawing tools for use in each of the components, doesn't just *look* the same across all of the compo-

nents—it is the same. If you move it to a new position while creating a diagram in a document, it's still there when you use it to dress up a form in the Data Filer. Keyboard macro support is common across all of the components.

Word processing power

In their efforts to distinguish their products, vendors continue to add more and more exotic features to list on the dust cover—whether people really need them or not. The word processor in Footprint Works doesn't have some of the features you find in DeScribe, WordPerfect, or AmiPro. But how often do you use options like an equation editor? Footprint Works includes the features *you* use, such as the spell checker and thesaurus. The button bar (they call it a ribbon) is not as extensive or customizable as the specialized word processors provide, but it includes font, point size, attributes (bold, italic, and so on), alignment, justification, and even tables. The graphics and text import features support all of the most common formats. (This is true for all of the Works modules, by the way.) There is support for definable styles, mail merge, and drawing from within the word processor itself. The search-and-replace function includes the ability to search for controls, such as bold or page breaks. Not so long ago, this would have been a best-of-breed WYSIWYG word processor in

its own right. But wait! There's more!

Straightforward spreadsheets

While this may not be the tool for chief financial officers, it's unlikely that the limit of 768 columns by 1,024 rows will affect most users of the spreadsheet component. The standard worksheet model is used, including the use of the "\$" sign to indicate absolute addressing. This standardization simplifies the import and export of worksheets from other spreadsheets such as 1-2-3 and Excel. Strangely, though, you cannot export worksheets in Excel format. This aspect will remove Footprints Works from consideration by those who must share worksheets with Excel users—a sizable group.

There are over 50 functions supported, including functions for text formatting, date formatting, arithmetic, and financial/statistical functions such as depreciation, internal rate of return, amortization, and standard deviation. Footprint Software also includes graphical options such as fonts, colors, and mouse-controlled height and width of cells. Rows and columns can be selectively hidden for better overall readability, and cells can be protected from user modification. Notes can be attached to cells, and the charting component is tightly coupled to spreadsheets. The screen can be split both vertically and horizontally, and panes can be frozen to force scrolling in tandem. The main missing function is the intelligent replication function that allows a user to specify a one and a two and then have the spreadsheet automatically fill later rows with incrementing numbers.

Artsy charts

The Chart component supports bar, stacked bar, line, area, bar and line, stacked bar and line, scatter, and pie charts. The maximum limit

No one questions the value of high-powered relational database management systems in the corporate environment.

of eight series' of data with up to 60 values each isn't much of a restriction. Much more than that and it becomes impossible to make any visual sense. As we mentioned earlier, links between spreadsheets and charts can be dynamic, with the chart changing as its component spreadsheet values change. This carries over to the word processor, so that as you modify a chart, its appearance in documents can change automatically.

Still, this component is the weakest part of Footprint Works. Everyone expects 3-D charts these days, and they are absent. Also, (especially with the popularity of color printers) if I have a 256-color system, I expect to be able to use those colors in charts and drawings. Still, the 16 colors and choice of patterns will suffice for the needs of many.

Form-based data storage

No one questions the value of high-powered relational database management systems in the corporate environment. But there are many times when you don't need to be able to search and sort through 5GB of data. Nor do you want the overhead and complexity that those systems bring. The Data Filer component of Footprint Works is a very straightforward forms design/data storage tool. It provides more than the entry-level offerings, with extras such as object alignment on forms,

and enhanced data types such as multi-line text, calculated numeric fields, logical fields (true/false or yes/no), and pictures. Fields can also have data-validation options, such as specifying that numeric fields must be between one and 1,000. You can have more than one form for a database, providing multiple ways to view the information, and you can have up to 47 indexes in a database. The query facilities are acceptable but, as you might suspect, there's no query-by-example. All reporting is done via the Report Writer component.

This component is a good start, but Footprint should build on it in the next release. For example, data validation could be improved by exploiting the graphical interface. You should be able to specify a list of acceptable values, and have Works present those in a group of radio buttons, thus forcing a valid entry.

Making it look good for the boss

One of the great lines from Fall Comdex came from the comedian Gallagher who pointed out the contradiction in having so many people carrying 20 pounds of books talking about the paperless office. Reports are still necessary, and the Report Writer component makes it easy to do simple reports from your databases. It includes group breaks to allow things like printing summary totals each time the customer name changes. This feature isn't fancy, but it gets the job done.

What was left out

Footprint Software worked to make its Works Workplace Shell-aware, going to the effort of registering its data file types with the Workplace Shell to allow direct loading and drag-and-drop. For some reason, though, they completely disregarded the color and scheme palettes. Rather than using the colors the user has already told OS/2 they prefer, Footprint forces boring black

text on a gray background (which, by the way, can make the cursor very difficult to find). Efforts to drag colors from the system palettes are ignored. Switching from "etched" to "standard" display mode changes the background to white, but again, the WPS palettes are ignored.

Timed backup would be nice for those of us who live in areas of questionable electric line stability and, when I was trying to directly move objects via drag and drop rather than using cut and paste, I discovered an innovative way to have Footprint Works end itself without being prompted to save my work. (Block moves via drag and drop work across windows, but not within a window.) Timed backup would have minimized the amount of lost work.

Putting it all together

Naturally, the five components of

Footprint Works can exchange information easily. Truthfully, this ability is not a big deal. You would expect any professional application these days to support the system clipboard for copying information from one program to another. What you might not expect from a bundled all-in-one package like Footprint Works is its support for linking objects with other applications. A chart designed in Footprint Works can, for example, change automatically when its underlying

data is changed in an external program such as a project-management system. In fact, in OLE-like fashion, you can launch the application where linked objects originate from within Footprint Works.

Glee or flee

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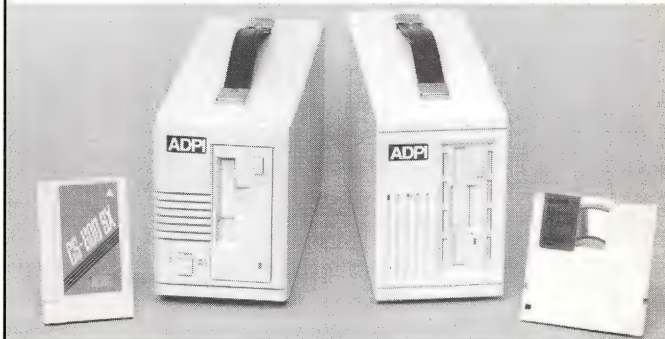
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and linkage of Footprint Works for some of their needs.

ZIP 2.0.1/UNZIP 5.0

PKWare, the company responsible for the popular PKZip and PKUnZip programs, started as a light-on-their-feet shareware organization. As the popularity of their products grew, so did their staff, overhead, and response time. Consequently,

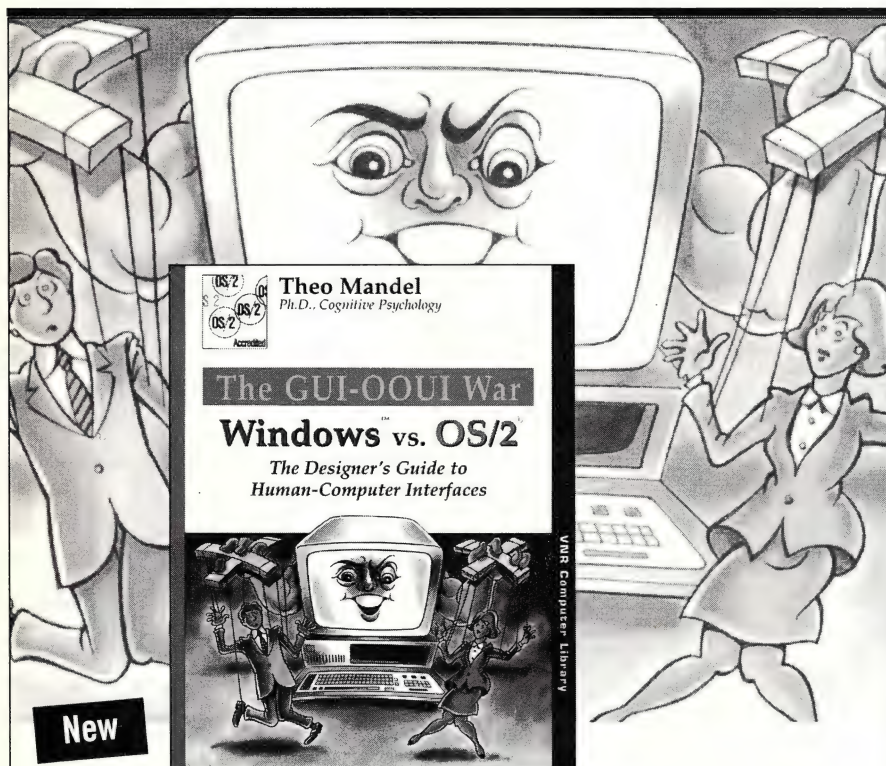
while the DOS versions of their products are now up to version 2.04, their OS/2 version is still at 1.10 and doesn't compress or decompress files in the 2.04 format. You can run the 2.04 versions in a DOS window, but you lose extended attributes and support for HPFS long filenames.

Filling this gap is a new set of OS/2 freeware programs that read

and write files in the ZIP format. Fortunately, Phil Katz (the PK in the PKZip) placed his .zip file format in the public domain so others could create these programs. In fact, the authors of Zip and UnZip said that Katz was willing to make minor tweaks in the current ZIP format to help further things along. It should come as no surprise that this accommodation turned out to be necessary. Not only do they have to worry about things like extended attributes in OS/2, but they've developed compatible versions for UNIX, Minix, Windows NT, Atari, Macintosh, VMS and their respective file systems.

Those familiar with PKZip and PKUnZip will need some re-education, as the parameters are different for Zip and UnZip. For example, the ZIP command doesn't accept the *-a* parameter—adding to or creating a ZIP file is the default. In addition, UnZip puts files back into the relative subdirectories from which they came without a command-line switch. I find these to be advantages, since the defaults are most often what I want. Those accustomed to the PKWare versions, however, need to be aware of the differences.

For performance comparisons, I used a subdirectory containing 34 files that included moderately compressible word-processing documents, highly compressible TIFF graphic files, and barely compressible binary files totaling 3,839,989 bytes. PKZIP compressed them into a 473,681-byte ZIP file in an average of 29.8 seconds. (Note, this does not include the time required to manually start a DOS command window. Speeds from a standard OS/2 command window, from which most people work, were seven to eight seconds longer.) In contrast, the 32-bit Zip took an average of 22.9 seconds to compress those files into a 503,387-byte ZIP file, which contained 4,212 bytes in extended attributes.



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Test Drives

In addition, Zip always stores the path information with the files. A 16-bit version of Zip is also available for those still running OS/2 1.x. That version took an average of 26.0 seconds for the same compression. All three programs offer optional faster execution, at the expense of less compression. Interestingly, though, PKUnZip decompressed the PKZipped files in an average of 12.0 seconds, while UnZip averaged 24.8 seconds on Zipped files. This difference in speed is largely explainable by the additional path information that Zip puts in the compressed file, since using UnZip against the PKZipped version only took an average of 13.0 seconds. Still, PKUnZip is the faster of the two, taking only 11.4 seconds to decompress the Zipped file!

Glee or Flee

Performance was largely a wash when you balance compression and decompression times. But, significantly, the file formats proved to be totally compatible. I had no problems whatsoever using UnZip on PKZipped files or vice versa. (Of course, DOS PKZip can't extract long filenames and extended attributes.) Switching to this freeware product gets the user one step closer to being able to remove DOS support from their system. It allows them to stop losing extended attributes when they compress files and adds support for long filenames (minor caveat: due to an OS/2 bug, which should be fixed in the 2.1 Service Pak, the programs cannot access files with an exclamation point in their name)—all at no charge. Such a deal!

Brian Proffitt has been in the computing industry for 20 years. He was part of IBM's OS/2 team, left IBM to become the director of PC Week's Corporate Labs, and is now the president of Visionary Research. Brian is the author of two books on OS/2: OS/2

Application Development Tools, and OS/2 Inside & Out. He has written for several publications, including IBM Personal Systems Developer and PC Week. He can be reached at CompuServe 75300,1466, or Internet 75300.1466@compuserve.com.

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Zip and UnZip

Zip and UnZip were developed by several cooperating people on Bitnet, who can be contacted at info-zip@wkvx1.bitnet. The files are available as UNZ501.EXE and ZIP201.ZIP in the OS2USER forum on CompuServe, as well as <ftp://os2.cdrom.com>.

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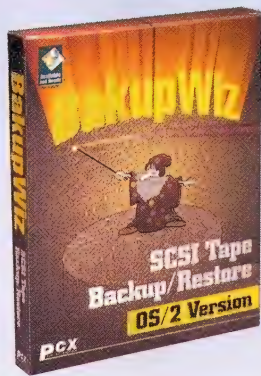
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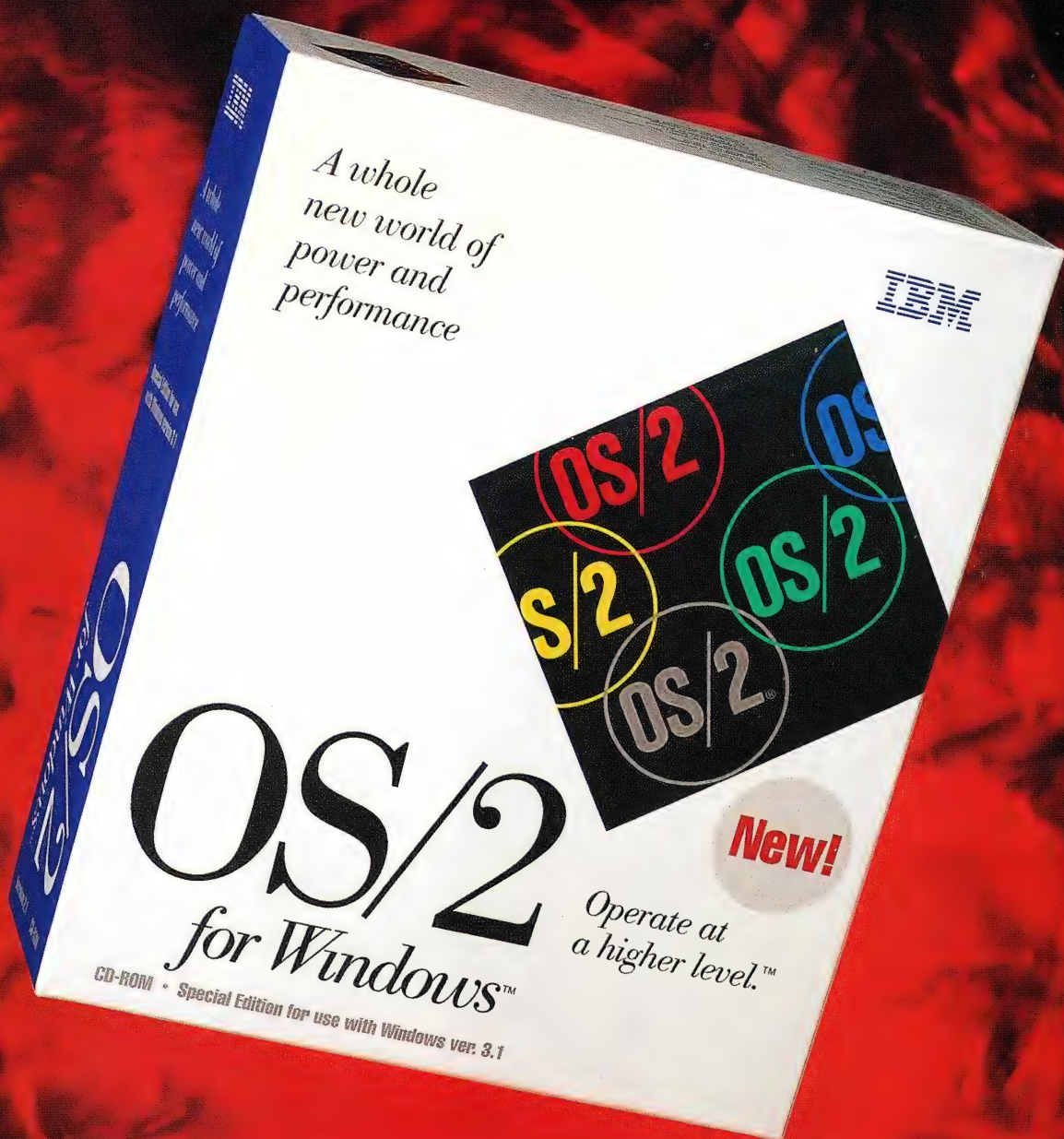


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By Eric Pinnell



OS/2 For Windows

OS/2 for Windows is the latest (and some might argue, the greatest) version of OS/2 to hit the market. Unlike OS/2 2.1, OS/2 for Windows (OS2FW) does not include any Windows code, which had been called Win-OS/2 in the 2.1 release. Instead, it makes use of your existing Microsoft Windows code to run Windows applications. OS2FW supports all the features of OS/2 2.1, including seamless video modes. How does OS2FW manage to work with Microsoft's Windows? The secret is a modified OS/2 2.1 Virtual DOS Machine (VDM) that can load Windows as if it were running under regular DOS—but more about that later.

OS/2 for Windows offers several advantages over OS/2 2.1 to Windows users. For starters, it's cheaper (\$49 for disk, \$39 for CD-ROM). If you choose to use it with Windows 3.1, OS2FW offers virtually the same features as the full OS/2 2.1 package, but at a lower price—especially if you already own Windows.

As part of my testing, I installed OS2FW on two systems (see Table 1). Both systems were partitioned using Boot Manager, so that I

could install multiple copies of OS/2 without having to reinstall applications. On the Dell 325, the C drive was partitioned into a 90MB OS/2 FAT partition, and a 10MB DOS FAT partition. On the IBM PS/2 Model 95, the C drive was a 100MB OS/2 HPFS partition and a 10MB DOS FAT partition. Both machines kept applications on a logical D drive (320MB on the Dell, 550MB on the PS/2). For the Trident board, the drivers were the default drivers for Windows and

WIN-OS/2 respectively. For the XGA-2, the drivers were the XGA-2 version 2.1 drivers for Windows and the seamless XGA-2 drivers from OS/2 2.1 and OS2FW. Prior to installation, I backed up all of my .ini files to a second directory (this precaution thankfully proved unnecessary).

Installation problems

The first problem encountered during installation was in trying to install OS2FW over an existing OS/2 partition. OS2FW simply won't install over OS/2 2.1. The solution was simple: use FDISK to delete the OS/2 2.1 partition—but make sure you have backed up any important data or utilities first.

I also had a minor problem with DSPINSTL, the display installation program that you can run from an OS/2 window. It cannot be used to change the video-driver resolution. Instead, you must use the Selective Install facility. Also, I discovered that you *must* have access to your

Table 1: System comparison.

	SYSTEM A	SYSTEM B
Maker	Dell	IBM
Model	325	PS/2 Model 95
CPU	25MHz 386 DX	50MHz 486DX
Bus	ISA	MicroChannel
RAM	8MB	24MB
Hard disk	1x100 MB IDE, 1x320MB IDE	1 x 1.2 GB SCSI-2
Video	Trident 8900c	IBM XGA-2
Resolution	800x600x256	1024x768x256
BIOS	Phoenix	IBM

Table 2: Relative Windsock Performance on the Dell 325 and IBM PS/2 Model 95.

	Processor		Video		Disk		Memory		Overall	
	IBM	Dell	IBM	Dell	IBM	Dell	IBM	Dell	IBM	Dell
Windows 3.1 (Std. Mode)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
OS/2 2.1 (Full Screen)	0	0	0	0	0	0	0	0	0	0
OS2FW (Full Screen)	0.9	0.9	0.4	0.9	1.3	0.9	0.9	0.8	0.8	0.9
OS2FW (Full Screen)	9	8	6	9	0	7	0	9	5	4
OS2FW (Full Screen)	0.9	0.9	0.4	0.9	1.5	0.9	0.9	0.9	0.8	0.9
OS2FW (Full Screen)	9	8	6	9	6	5	6	2	7	4

Windsock runs a series of tests designed to stress the processor, video, disk, and memory subsystems. These tests are a measure of the raw computing power and driver speed of the target operating system on the given platform. Higher numbers represent greater performance.

Table 3: Relative WinTach Performance on the Dell 325 and IBM PS/2 Model 95.

	Word Processing		CAD		Spreadsheet		Paint		Overall	
	IBM	Dell	IBM	Dell	IBM	Dell	IBM	Dell	IBM	Dell
Windows 3.1 (Std. Mode)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
OS/2 2.1 (Full Screen)	0	0	0	0	0	0	0	0	0	0
OS2FW (Full Screen)	0.5	0.9	0.5	0.7	0.7	1.1	0.8	1.0	0.6	0.9
OS2FW (Full Screen)	8	9	1	4	0	0	8	8	5	6
OS2FW (Full Screen)	0.5	0.9	0.5	0.7	0.6	1.1	0.8	1.0	0.6	0.9
OS2FW (Full Screen)	6	4	6	1	9	0	4	6	2	4

WinTach is a test that measures typical applications performance, rather than raw system power. Each of the tests runs a series of Windows APIs that simulate what an application might do, such as scrolling a spreadsheet, doing a CAD layout, and so on.

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Microsoft Windows 3.1 disks (so that OS2FW can copy some fonts and other drivers over to OS/2). If your system comes pre-installed with Windows 3.1, make sure you find or make disks prior to starting the OS2FW install.

After the installation process was complete, I had a proper OS/2 desktop. OS2FW found my existing Windows directory and seamlessly migrated Windows into OS/2. However, a few peculiarities arose. The installation process created two folders, one labeled Windows Applications, and the other, named WIN-OS/2 Groups, contained *another* folder called Windows Applications. The former Windows Applications folder contained only some of the programs that Migrate found. The latter had all of them, but some of the icons were not properly registered. (It turned out that the PATH pointed

to the C drives for some of them, rather than the D drive where the application resides.) However, clearly the OS2FW migration database has later entries than OS/2 2.1, as it found many applications that the OS/2 2.1 installation program does not find. It also corrects some OS/2 2.1 bugs (Quattro Pro is now called Quattro Pro, and not Quickpay).

I was quite surprised that my existing Windows .ini files could be run without modification. Previously, I had to install the standard desktop on OS/2 2.1 because my .ini files would not work. However, this was not a problem under OS2FW. The only quirk I found was that OS2FW removed all the font entries for both ATM and FaceLift from my .ini file. Reinstalling the fonts was simply a matter of selecting the font directories and clicking on Add.

Benchmarks

Since OS2FW is targeted primarily at existing Windows users, I decided to run some benchmarks to test the performance of Windows applications under OS/2, Windows, and OS2FW. The benchmarks used were Windsock version 3.20 (Table 2) and WinTach version 1.0 (Table 3). These benchmarks can both be downloaded from CompuServe's WINADV forum. All benchmarks are run in standard mode. All scores are the average of three measurements for each test. The numbers in the right-hand column under each heading represent the Dell 325, the numbers to the left represent the IBM PS/2 Model 95. All numbers represent the relative performance compared with Windows 3.1 on their respective machines.

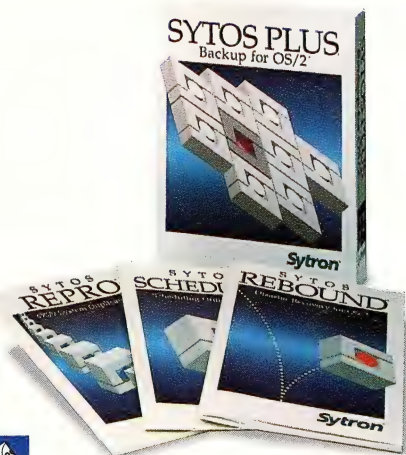
The tests proved quite revealing. First of all, they showed that on the Dell, performance was very close to

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that under native Windows, for both OS/2 2.1 and OS2FW. On the PS/2, however, the OS/2 performance of the XGA-2 based video card was poor (so much for the myth that IBM hardware and software work best together). This poor performance can be attributed to unoptimized seamless Windows video drivers for OS/2. To show what a difference drivers can make, I switched to the original XGA drivers that came with Windows 3.1. The performance of the XGA-2 board under Windows with the old drivers was worse: it dropped to only 65% of that of the updated drivers (but even these drivers outperformed the seamless XGA drivers in OS/2). Hopefully, when the OS/2 2.1 Service Pack is released some time in early 1994, the performance of the XGA-2 drivers will be improved.

You'll notice that the WinTach

benchmark shows that the WIN-OS/2 code in OS/2 2.1 outperforms Windows in OS2FW by a small margin. This can be attributed to the fact that IBM recompiled Windows using an optimizing compiler from Watcom. However, the Windsock benchmark shows that drivers work at about the same speed under OS/2 as OS2FW.

DOS performance is somewhat more difficult to quantify, since it varies greatly depending on the application. As a ballpark figure, CPU-intensive applications (such as games) will run 10% to 30% slower under OS/2 than they do under DOS (this result varies according to the program and your hardware configuration). On the other hand, I/O-intensive applications (such as databases) can run three to five times faster. In one case, a user reported that his database application ran a whopping 17

times faster under OS/2 than under DOS!

Why OS/2 for Windows?

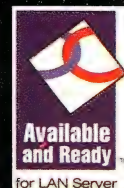
So, the big question is: Why would anyone want to run OS2FW? Well, to put it bluntly, it is the best 32-bit operating system on the market today. DOS users will salivate over the power of OS/2's separate Virtual DOS Machines (VDMs). These allow each DOS session to have 640KB of memory (up to 740KB for character-mode applications). And, since each icon on the desktop can be customized with its own settings (including separate *autoexec.bat* files), a DOS user does not need to worry about having to reboot to use a different configuration.

Of course, there are some restrictions on the types of applications that can be run under OS/2's VDMs. Applications that use VCPI DOS extenders will not run (although

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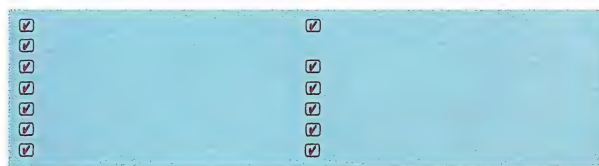
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DPMI DOS extenders will). Also, proprietary memory-management schemes will most likely not work. Because the I/O of the DOS VDM is virtualized, the DOS VDM cannot handle more than 1,100 interrupts per second. Thus, digital speech will not work under an OS/2 VDM (although voice output via .wav files is possible). Still, OS/2 is compatible with the vast majority of available

applications. For maximum compatibility, you can boot a DOS image off your machine, thus giving you code that is version-specific to the type of DOS you want to load.

Running DOS-based file utilities is also a problem. OS/2 uses extended attributes (EAs) to mark additional data about files. These EAs are unused segments of your DOS files, and they point to a hidden file

called *ea data.sf*, which contains the extra information OS/2 needs. Since most DOS file utilities do not recognize EAs, you cannot use them to back up your OS/2 system (OS/2 applications that perform this function are available, however).

DOS file compression is also a no-no for the same reason. Also, OS/2 can use a file system called the High Performance File System (HPFS) to increase performance and to provide for file names of up to 255 characters in length. DOS programs that write directly to the FAT file structure will not work (although few DOS programs actually do). DOS programs *can* read HPFS volumes provided the names of the files follow the 8.3 naming convention (such as *myfile.bat*) and not the long names (such as *june_1993_west_coast_sales_forecasts_for_silk_pyjamas*). Some companies, such as Stac Electronics in Carlsbad, Calif., offer data-compression products (Stacker for DOS and OS/2) that work both for DOS and OS/2. Others, such as Proportional Software in Ft. Collins, Colo., are advertising an OS/2-only version (DCF/2) that can compress both FAT and HPFS drives.

Virtually all Windows applications (including Enhanced-mode applications) run under OS/2, with the exception of those applications that use virtual device drivers (VxDs) or the Win32 APIs (few of these types of applications are on the market). IBM has promised to look at both Win32 and VxD support for a future version of OS/2.

Don't Argue With Mommy

All applications, whether from DOS, Windows, or OS/2, can benefit from the advantage of preemptive multitasking (Windows 3.1 uses cooperative multitasking). To explain the difference between cooperative and preemptive multitasking, I use the following analogy: Imagine you have two children who want to play with one ball.

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Each child represents a process that wants to use the CPU. The ball represents the CPU. For a given child to get the ball and play, the other child (application) has to relinquish control of the ball (CPU) and cooperate in sharing resources. Of course, as in real life, children tend to hog their toys, so under Windows, one application sits idle (and cries?) while the other plays its games.

Under OS/2 2.1 or OS2FW, a system called preemptive multitasking appears (roughly analogous to a parent watching two children). She times how long each child gets to play, so that each gets the ball according to how she perceives the need. Since OS/2 can interrupt a process for an important event (such as a keystroke), the system remains responsive to all processes (translation: nobody argues with mommy).

The difference between cooperative and preemptive multitasking can be dramatically illustrated. Start up Windows, then fire up a video or audio file. Next, start a disk copy, and try typing on your favorite word processor. You will see the output of the multimedia system become choppy, and your word processor will begin to miss keystrokes. Clearly, cooperative multitasking does not work.

Under OS/2, fire up these same applications, but put each in a separate session. You will see that the multimedia runs smoothly, the disk copies correctly, and your word processor will not miss a beat. That's multitasking that works.

OS2FW and OS/2 2.1 will automatically preemptively multitask DOS and OS/2 applications. To preemptively multitask Windows applications, it requires that each be put into its own separate session, which requires more RAM (1.5MB per application). Note that OS2FW, like OS/2 2.1, can use cooperative multitasking of Windows applications all in the same address, with

When an OS/2 application spawns a thread, it creates a sub-program that is under control of the original program.

only one copy of Windows active. However, in addition to being preemptively multitasked, the separate sessions are protected from one another, so that a single Windows application cannot take down other applications that are not in its address space. This protection will dramatically reduce the occurrence of the dreaded General Protection Fault (GPF).

Not even Windows 4.0 will be able to preemptively multitask Windows 3.1 applications, and neither can Windows NT (both require you to upgrade your Windows applications to 32-bit versions to get preemptive multitasking. Otherwise, they cooperatively multitask your Windows 3.1 applications in one address space). DOS and OS/2 applications do not require any additional memory as they are all automatically preemptively multitasked.

Threads Too

But the power of OS/2 extends beyond DOS and Windows. Native OS/2 applications can use a technique called multithreading. When an OS/2 application spawns a thread, it creates a sub-program that is under control of the original program. This allows a program to spin off a process that will signal the main program when it is complete. For example, a word processor can spin off a thread to do the printing. The user gets control of the program back immediately without having to sit and watch the hourglass.

Want another example of the power of threads? Well, I am a frequent user of CompuServe. I use an

off-line reader called Golden Compass (made by Creative Systems Programming in Mt. Laurel, N.J.). It uses threads for reading and writing messages and electronic mail to CIS. So, when a given forum is finished, I can begin to read and reply to those messages while Golden Compass continues to retrieve messages from other forums for me. It has saved at least a half an hour a day of my time, because I can work without waiting for CIS to finish.

MIS folks will also love OS2FW's powerful abilities as a local area network (LAN) client. Suppose you are a typical business running Novell's NetWare on a LAN. Your client systems running DOS often run out of conventional memory because they need to load the network drivers. Under OS/2, applications have access to a whopping 512MB of RAM. So, the NetWare Requestor for OS/2 will not occupy any DOS conventional memory. In fact, under OS/2, you can have a client connected to a NetWare server that has several DOS sessions—each with 640KB of RAM. You can also run multiple Windows applications.

All in all, OS/2's future looks brighter than ever, and those who make the move to OS/2 will discover that they can have the power of a proven 32-bit operating system now. No hype. No vague promises. And, best of all, no waiting. Besides, for \$49, how can you go wrong?

Eric Pinnell is an OS/2 developer based in Montreal West, Quebec. He can be reached via CompuServe at 70031,435.

How to choose a notebook suitable for running OS/2 by Fabian Pascal

On the face of it, there is hardly a more desirable operating system for notebooks than OS/2, even for users of DOS and Windows applications. OS/2's ability to truly multitask them, as well as its native applications, comes in very handy when they are all needed on the road. The industry, however, seems oblivious to its potential. Notebook vendors show little interest in or knowledge of whether and how OS/2 runs on their machines, and the press is equally indifferent. Thus, despite the constant progress in portable technology and the rapid proliferation of notebook models, an affordable "true" notebook that runs OS/2 well is still difficult to find.

The history of OS/2 explains some of this gap between reality and potential. The "operating system wars," which have political and marketing (rather

Taking it With You

than technical or functional) roots make both hardware and software vendors, particularly the smaller and most innovative ones, wary of committing resources to anything other than the large installed DOS/Windows base. Indeed, the ability to run Windows applications under OS/2 gives little incentive to software developers to come up with more demanding native OS/2 versions, which is where most of the benefits from OS/2 would really come from.

The fact that OS/2 was not designed with notebooks in mind does not help either. For its better functionality, it demands resources that even desktops cannot readily provide, at least not inexpensively. Native OS/2 applications are frequently straight ports from Windows, and tend to use resources inefficient-

ly or fail to fully exploit OS/2's capabilities, such as multithreading. Windows applications are not better, and DOS applications, which were not designed for multitasking, must frequently be tweaked, by trial and error, with a variety of unintuitive settings to prevent them from hogging resources. Notebooks are much more sensitive to these problems than desktops.

Industry politics notwithstanding, OS/2 on notebooks makes sense. But in the absence of any published requirements for OS/2-capable notebooks, let alone product testing and evaluations, selecting a proper machine is difficult and may lead to trouble, because most otherwise desirable notebooks are still not up to the rigors of OS/2. The purpose of this article is to provide some basic guidelines for those considering this option, and to alert vendors to what is



necessary to make it a viable one.

General Considerations

With such a wide range of portable machines, from luggables to sub-notebooks and Personal Digital Assistants (PDAs), what is a notebook? Depending on needs and preferences, some users may be willing to trade some portability for more functionality, others would prefer the opposite. The whole point is not to force the user to choose between the two, but it is here that the problem lies.

Based on my experience, the desirable notebook measures at most 8½ by 11 by two inches and weighs six pounds or less (including battery). An internal floppy drive, metal hydride or, preferably, the newer, longer-lasting ion batteries, and a small, light power supply (universal for foreign travel) are also recommended. For those who do most of their work in flight rather than hotels, at least one additional battery is required. Most batteries permit 1½ to two hours worth of work under DOS, but less will be available for color machines and multitasking GUI-based environments such as OS/2, so two spares may be necessary (which is why the batteries should be light). Indeed, a weight of six pounds including two batteries and the power supply would be ideal, but is currently too much to ask.

As a rule, the more system resources are thrown at OS/2, the better it will perform. But the full configurations usually necessary for OS/2 more than double the affordable prices of the base configurations advertised by vendors. This situation is due in large part to the fact that most notebook components are proprietary.

One of the most common uses of notebooks is for presentations. Since an OS/2-capable system is expensive, the needs for this function should be carefully considered,

Presentations are usually performed using separate LCD projection panels. But by adding several pounds worth of an additional component, they defeat even the lightest notebooks, and are inconvenient to boot. Moreover, very few panels have decent resolution, and they are heavy and expensive. The ideal solution would be a detachable notebook screen that doubles as a projection panel. A few such machines are available, but they may force compromises in other areas.

Processor

Less than a 486 machine does not make sense for OS/2, particularly in this day and age. Many 486 notebooks (such as those with SLC or SX processors) lack a math coprocessor, which boosts battery life—even more important with OS/2—but if you will ever run calculation-intensive applications, such as spreadsheets, it is recommended that you go for a DX-based, and preferably 66MHz 486DX2 machine—and the larger the CPU cache the better.

Talk is increasing about the future generation of chips such as the Pentium or PowerPC. But they are not even established at the desktop level yet, let alone for notebooks. In fact, it has taken even the 486 machines a while to appear because the chip was causing too much heat within the notebook constraints. One can only imagine that this problem will be harder to resolve for more powerful CPUs.

Bus Design

Several buses are currently competing for attention: the standard AT

As a rule, the more system resources are thrown at OS/2, the better it will perform.

bus (ISA), IBM's Micro Channel Architecture (MCA), EISA, VESA Local Bus (VLB), and Intel's PCI. It is not easy for even technically inclined users to understand the differences between them—particularly their practical implications.

The bus affects performance and, at the desktop level, the availability and price of peripheral adapters, usually trading off the two. Thus, many more inexpensive ISA adapters are available than, for example, EISA or MCA adapters. But the 16-bit ISA bus doesn't perform as well as the two 32-bit buses (the MCA, VLB, and PCI buses also run at higher frequencies than the ISA/EISA 8MHz buses).

However, notebooks do not permit many adapter slots, and are proprietary anyway, so performance is the main bus issue. A 32-bit operating system and 486 processors can be fully exploited with a 32-bit data-path bus. Currently, no EISA or PCI notebooks are on the market, so the choice is between IBM's PS/2 (MCA), ISA with video VLB, and 16-bit ISA, which is also the descending order of priority for OS/2.

Memory requirements

OS/2's virtual-memory approach means that it can multitask more applications than available physical memory permits. To this end, it swaps memory contents to disk, and returns them to memory as necessary. Of course, the more it swaps to disk, the slower the performance. Thus, the more memory is available on the system, the less the need for swapping, and the better the performance.

OS/2 can run with as little as

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6MB (or less) of memory. But, when more memory is available, it may grab it. For example, it takes more than 9MB on my 12MB desktop. Three basic OS/2 utilities (a screen blanker, statistics displayer, and window-switcher) consume another 1.5MB, leaving about .5 to 1MB available for any other applications, which forces swapping. Moreover, some native OS/2 applications, particularly if they use large data or graphics files, can bring the system to a practical halt by forcing OS/2 to swap tens of megabytes to disk. While disk caching can help, the cache is obviously overwhelmed by such large swappers and, besides, the cache itself consumes memory.

Most notebooks come with 4MB of RAM, which is obviously insufficient. Stand-alone, basic configurations without lots of devices can probably get by with 12MB (and some swapping), but 16MB is highly recommended. Even then, the machine should be further upgradable so that memory can be added, if necessary or affordable. Notebooks accepting a maximum of less than 20MB RAM are not a good idea.

Notebook memory is usually proprietary and expensive. An upgrade from 4MB to 20MB can easily double the base price, but for smooth OS/2 operation, it cannot be avoided. Many notebooks are upgradable only in discrete lumps, for example, to 8MB or 20MB, but not to 12MB or 16MB. Upgradability by the user is cheaper and faster, but not all notebooks permit it.

Memory speed is also important. At least 70ns and, preferably, 60ns RAM is recommended, but not many notebooks provide the latter. The RAM speed is not always published by vendors, so it should be ascertained prior to buying.

Video requirements

A major benefit of OS/2 is true multitasking, but to take advantage of

it, users must be able to have multiple windows open and accessible simultaneously on the screen. This ability requires a large screen and high video resolution.

The largest notebook screens available on the market measure 10 inches diagonally, but are usually monochrome. Color screens tend to be in the eight-inch range. This size limits practical video resolution. With a 10-inch screen, one would want to run with 800x600, but with the smaller color screens, VGA (640x480) is probably the best that can be done. Today, few (if any) notebook displays allow higher than 640x480 resolution.

In VGA mode, one open window takes the whole screen, and must be scrolled frequently. With many tasks active, switching tasks requires lots of minimizing and maximizing windows, which makes multitasking inconvenient. The good thing about VGA is that all notebooks that run OS/2 will automatically support it. Higher resolutions, on the other hand, require OS/2-specific drivers (supporting IBM's 8514/A or XGA modes or non-IBM proprietary SVGA modes), and notebook video adapters do not come with even 800x600 OS/2 drivers.

For presentations, even if only VGA is supported for the screen, a higher resolution is desirable, at least for projections, as VGA-based projection panels are not very practical with large groups. Most notebooks provide ports for external monitors and panels, but resolutions higher than VGA are rare and they are almost always designed for DOS and Windows—not OS/2! Only DOS and Windows presentation software can take advantage of it. A machine that can display simultaneously on its screen and an LCD panel is also recommended for presentations (not all do).

While color is, of course, preferable, in addition to offering larger screens, monochrome machines

are cheaper and prolong battery life. Those who opt for the latter should require 64 shades of grey, and should visually test the quality of the screen under OS/2. A video adapter with at least 1MB of video memory on board is recommended for performance, but not many notebooks include it.

Storage space

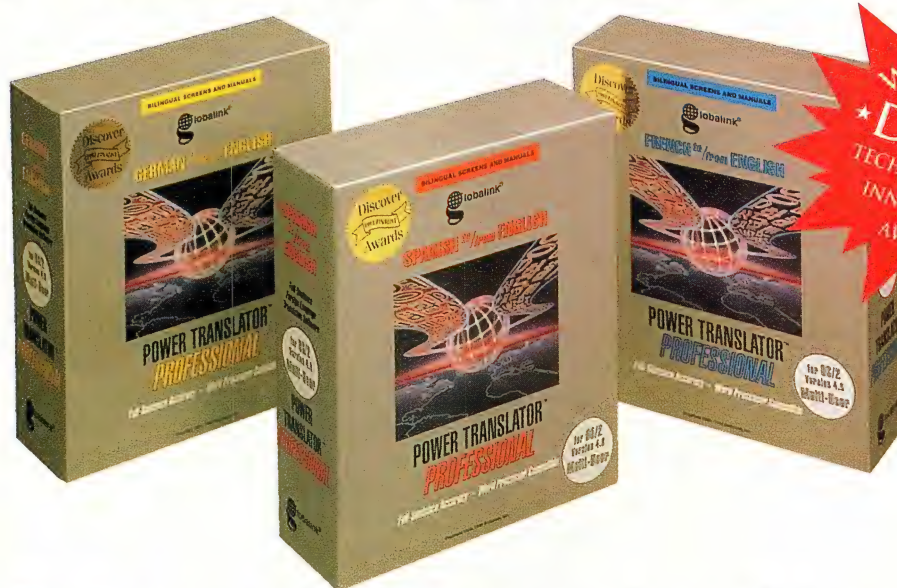
In its basic configuration, OS/2 itself is not very space demanding—about 30 to 40MB will do. But OS/2 program files and data files, particularly graphics, are large, and if their processing by applications is not very efficient, disk swapping may cause a loss of performance.

While its true multitasking makes OS/2 more robust than Windows with respect to crashes and corruption, backup and recovery are very important in this type of environment. Under OS/2, recovery without backups is much more time-consuming and complicated than under DOS. Unfortunately, OS/2 does not come with good backup and restore facilities, and those it does offer often may lose customization to various degrees (all of it if complete reinstallation becomes necessary).

For these reasons, it is important to make sure that sufficient storage space is available. Most base configurations offer hard drives that hover around 100 to 150MB, but may have 200 to 250MB or even 300 to 350MB options. Such options, if affordable, should be taken. It is also recommended, given disk swapping, that drives have high transfer rates and low average access times, which many notebooks don't provide.

Depending on use, even 200 to 300MB may not be sufficient, at least in the long run. Some notebooks come with removable drives, which may seem the right solution, but there is a catch. The original OS/2 design by Microsoft does not permit booting from a removable

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drive (which OS/2 treats like a large—and slow—floppy). To treat them as (faster) hard disks, OS/2 locks such drives, defeating removability. Drives cannot be switched for data saving. Moreover, as a precaution, backups should always be performed on a drive that is physically distinct from the boot drive, but with the removable drive locked in place, this precaution is not possible.

For multiple drive support and good performance, the solution is SCSI. Up to seven devices complying with the SCSI standard can be daisy-chained from one adapter. However, notebooks do not come with SCSI adapters. Some docking stations may provide SCSI capability, but users may not want to incur the expense, particularly those who already have a desktop. Indeed, owners of desktops with SCSI adapters may want an external SCSI drive to do double duty, serving the

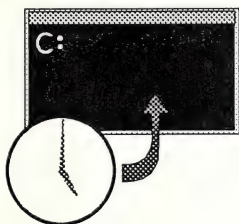
desktop and the notebook.

This approach is possible with a parallel-to-SCSI adapter, which gives a system access to SCSI devices through its parallel port. Such adapters connect to the port, and an external SCSI hard disk or removable drive (cartridge or tape) connects to the adapter. Such adapters are starting to appear in the form of credit-card sized PCMCIA cards, which is a more elegant solution, but they require notebooks that have PCMCIA slots, and OS/2 support by the adapter manufacturer.

OS/2 comes with a *pcmcia.sys* driver (its capabilities are limited, and subject to change), but for PCMCIA adapters to work, both the notebook and adapter manufacturer must provide their own drivers supporting OS/2. Furthermore, true standards exist only in theory. Implementations vary by product, which is particularly true for SCSI and PCMCIA. Users should verify by testing that their specific notebook/PCMCIA adapter/external SCSI drive combination works under OS/2.

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Some users look to compression software to extend storage space on their hard disks, and OS/2 versions of such software are available. They are, however, relatively new and quirky by nature. Since their failures can have serious consequences, it is preferable to delay their use until they mature.

Communications Support

Modem and fax communication is another task to which notebooks are put extensively. Fax modems, with 14,400 bps as the current standard for speed, proliferate. Users must decide between an external and internal unit. With notebooks, the trade-offs are generally between more convenience with internal modems and better ability to monitor and replace or upgrade with external units. External modems can also serve double duty with the desktop.

There is one additional advantage to internal fax modems: they can be equipped with a fax coprocessor, relieving the CPU from the burden. In multitasking environments such as OS/2, this option has a significant effect on performance. It would be particularly beneficial for notebooks, where resources are at a premium. However, only one desktop fax modem card with a fax coprocessor is available: the Intel SatisFAXtion 400, and none are available for notebooks. In fact, the 400 does not even have an OS/2 driver, its DOS driver just happens to work, although it is quirky and does not take full advantage of the proprietary buffering UART of the fax modem's serial port (OS/2 exploits only the 16550 UARTs).

With external units, users should make sure that their notebook's serial port is equipped with

a 16550 UART (rather than the older 16450), which is more reliable, and which OS/2 exploits for better performance.

PCMCIA fax modems attenuate some of the drawbacks of internal adapters and, with the advent of PCMCIA support by desktops, they too will be sharable. A PCMCIA slot could possibly be used for a parallel-to-SCSI adapter and the fax modem, as necessary. Of course, if you intend to use a parallel-to-SCSI adapter and fax modem simultaneously, the notebook must have two PCMCIA free slots (slots may also be used by memory, network, or even the newer disk-drive cards). But, as I already mentioned, you must make sure that the PCMCIA fax modem implements a 16550 UART, and comes with an OS/2 device driver and card-services driver from the notebook manufacturer.

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Not a Rose Garden

Unless the long-promised "light" version of OS/2 appears, those unwilling to accept larger or heavier solutions than the ones we just looked at will have a hard time finding their ideal OS/2 machine. Some tradeoffs must be made, and the optimal compromise depends on the specific use to which a machine will be put. The clearer the user is about the use of the system, the more intelligent the decision will be. Even if the initial use is limited, users should not lock themselves into a configuration that cannot grow.

Whatever the configuration selected, it will probably have quirks. Most problems in OS/2 stem from interactions between several hardware and software components. Almost inevitably, this will take the user into the "no-man's land" of the multi-vendor interface,

which is demanding, and will test the patience of the average user. Problems are frequently hard to diagnose, let alone resolve, and the highly proprietary nature of notebooks, coupled with lack of attention to OS/2 by the vendors, can lead to finger pointing and no resolutions. It is, therefore, very important to select products by reputable manufacturers and developers, who provide either free support by phone or via an electronic forum, and from reputable vendors, preferably local, who have a generous, explicit return policy. As one user who learned the hard way put it:

"My advice: since the feel of a laptop is so important if you use it a lot, don't get one you can't return for free within 30 days. Then, schedule your life so you have time to work the hell out of it in that time. Do some presentations, if that's what you do, do long spells

of typing, take it on the road, and really see how it stacks up to you and your battery usage. (Be sure not to ding it up and don't open the documentation or software if you can avoid it—some places charge you for them if you do)."

This advice is excellent, and applies to the full configuration, including the components that are purchased separately from the notebook.

Fabian Pascal is an independent consultant, educator, and writer specializing in relational database management, OS/2, and office and portable computing in San Francisco, Calif. He is the author of SQL and Relational Basics (M&T Books, 1990), Understanding Relational Databases (John Wiley, 1993), and an OS/2 columnist for MicroTimes. He can be reached on MCI Mail as FPascal and on CompuServe as 73677,3306.

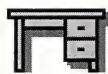


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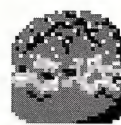
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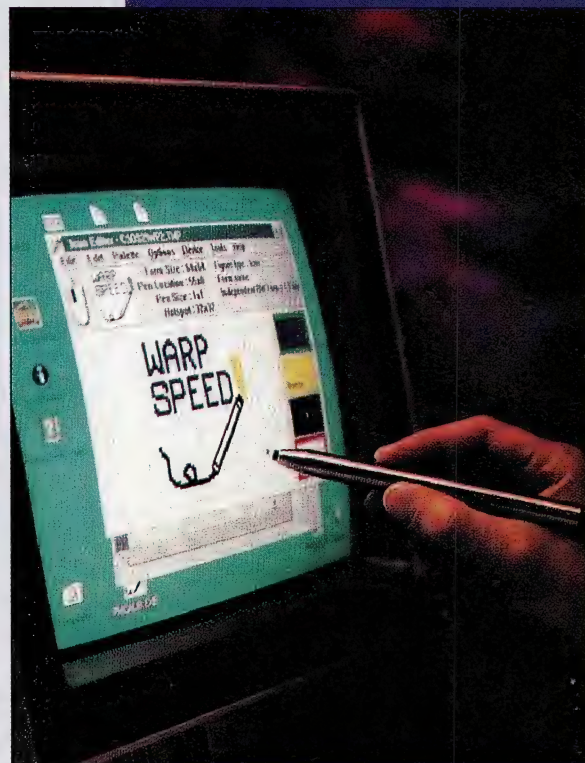
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Communications Manager/2

Inside OS/2's advanced connectivity toolkit

By John E. Johnston

OS/2 is frequently referred to as the "integration platform." In an enterprise, an OS/2 client workstation can be configured to attach to multiple mainframes, an IBM AS/400, a VAX cluster, and a local-area network (LAN). The beauty of this flexibility is that all of these systems can be accessed concurrently from a single workstation, using a single network cable. IBM's Communications Manager/2 (CM/2) is one of the tools available to make cross-platform connectivity possible.

CM/2 is relatively new; it was introduced around the time OS/2 2.1 was released. Prior to OS/2 2.1, the Communications Manager function (which CM/2 replaces) was obtainable as an add-on to OS/2. This early add-on was known as OS/2 Extended Services. The Extended Services product contained many of the same functions as today's CM/2. CM/2 added several new features to Extended Services, including Integrated Services Digital Network (ISDN) and Advanced Peer-to-Peer Networking (APPN) support. The communications configuration process was also completely redesigned with CM/2.

Interconnectivity

Back in the 1960s, mainframes ruled the corporate world and dumb IBM 3270 terminals populated office cubicles. Mainframe printers were placed in strategic locations so that multiple users could get their printed output. These mainframe devices used coaxial cable to connect the terminal to the mainframe. A few years

later, mini computers, such as Digital Equipment Corp.'s VAX, began finding their way into corporate America. To access these mini computers, a different type of terminal and cabling system was required. Many companies would run this new cable

to mini-computer terminals. Then, in the 1980s, the personal computer revolution began. Now, the office cubicles were getting cramped for space. It was not uncommon for a single work area to have an IBM 3270 terminal, an IBM printer, a DEC VT-100 terminal, a DEC printer, a PC, and a PC printer. Next came the LAN, which required another new type of wiring scheme. Not only were the office work areas cluttered with computer equipment, but the walls were filled with all of these different types of wiring.

CM/2 ends this problem. A properly configured OS/2 workstation can attach to all of these systems using a single wire. Better yet, the end user could access all of these systems concurrently. CM/2 also provides a method by which a PC printer can be used to print output from each of these platforms.

Two basic functions are required to provide access to multiple disparate systems; terminal emulation on the workstation and physical connectivity between the workstation and the host computer. CM/2 provides several different terminal emulators and support for a plethora of physical connectivity schemes:

■ **CM/2 Terminal Emulation:** Almost all PCs

**CM/2 provides
several different terminal
emulators and support for
a plethora of physical
connectivity schemes**

that access a mainframe or mini computer use terminal emulation. Terminal emulation is the process by which a PC, with the correct software, acts and looks like a native mainframe or mini computer terminal. At first, it seems strange to turn an expensive personal computer into a dumb terminal, but this strategy is the simplest method available because it requires no modification to the established mainframe or mini computer environment. CM/2 provides terminal emulators for the mainframe, the AS/400 mini computer, and the VAX.

- **Mainframe Connectivity:** The CM/2 terminal emulators are only the tip of the iceberg. We still must establish the actual connection to the host computer(s). The options available for CM/2-to-mainframe connectivity are plentiful and far too com-

plex to cover in this article. A LAN that is attached to a CM/2 workstation can access a mainframe computer by two basic methods, via a gateway or as a downstream physical unit (DSPU).

With the gateway-connectivity option, the gateway PC is configured to look like a mainframe-terminal control unit. This gateway can then provide access to the mainframe for many LAN-attached client workstations. A CM/2 workstation can be configured as the gateway PC, or other products, such as NetWare for SAA, can be used. Figure 1 illustrates a typical CM/2 gateway configuration. Notice that the gateway is running CM/2 and has two network interface adapters (NICs), one Token-Ring NIC, and one Ethernet NIC. This configuration allows an organization to use the capacity and

reliability of the Token-Ring-to-mainframe connectivity while also providing the ability to use the less expensive Ethernet adapters in all of the user workstations. This method is only one of the many possible LAN-to-mainframe connectivity options. The gateway could also be implemented in a pure Ethernet or pure Token Ring environment.

When a CM/2 workstation is configured as a DSPU, it performs the gateway function and the terminal-emulation function in the same PC. DSPU host connectivity is perhaps the most flexible and stable host-connectivity method available today. Both the gateway and DSPU connectivity options can be used with Ethernet and Token Ring attached workstations. Figure 2 illustrates a typical DSPU LAN-to-mainframe connection.

Mainframe printer support is also provided with CM/2. A CM/2

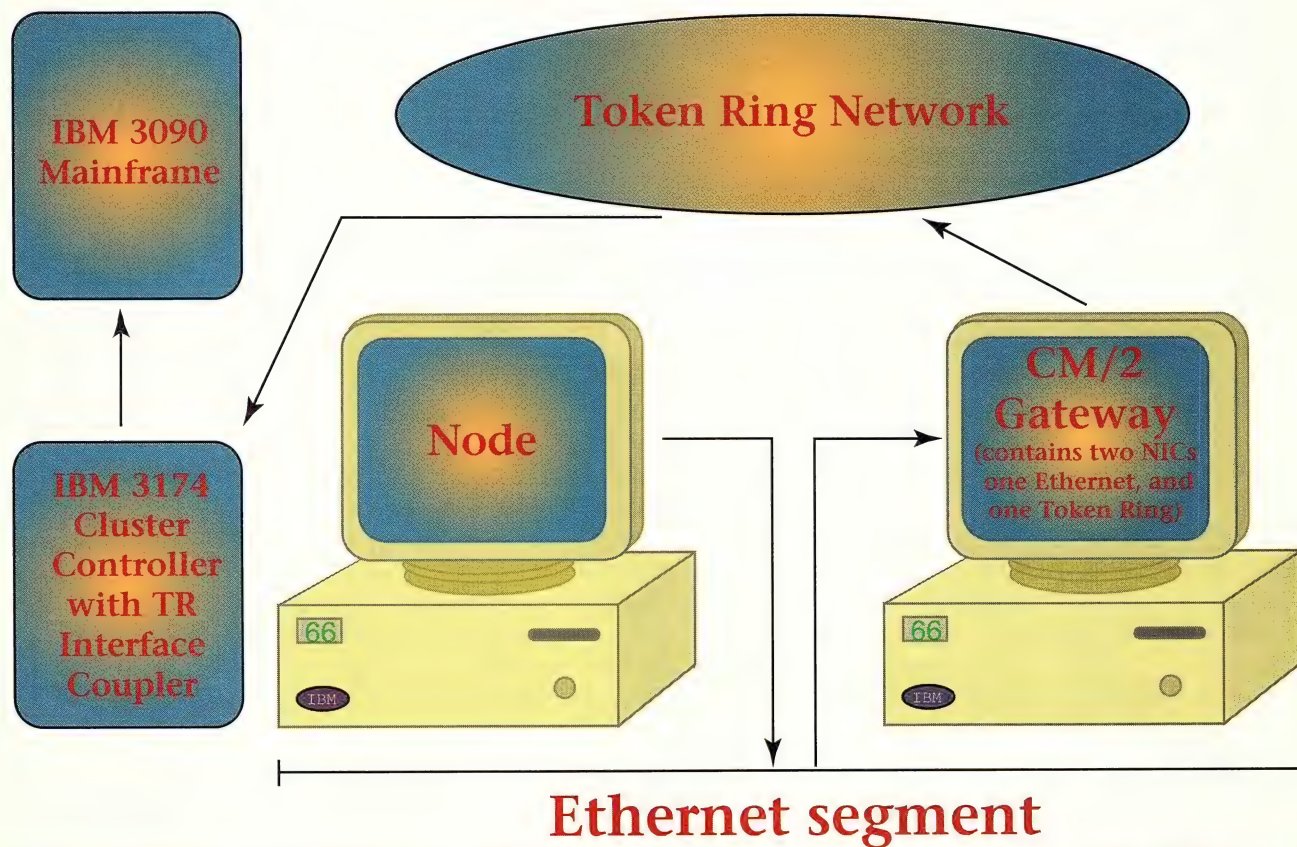


Figure 1: A CM/2 workstation can also be configured as a gateway.

workstation with a PC printer attached to it can be configured in a manner where the PC printer can emulate a mainframe printer. Host printing from applications such as CICS and JES328X can then be routed directly to the end user's PC printer. It does not matter what type of physical connection is made between the CM/2 workstation and the mainframe to provide mainframe printer support.

- **AS/400 Connectivity:** Connectivity to an AS/400 is a little different. No gateway or DSPU options are available in the AS/400 architecture. The CM/2 workstation must simply emulate an AS/400 terminal. The physical connection between the CM/2 workstation and the AS/400 can be accomplished using a Token Ring, Ethernet, SDLC, Twinaxial, or X.25 adapter. CM/2 provides AS/400 printer support, just as with mainframe connectivity.
- **VAX Connectivity:** VAX access via a CM/2 workstation is much sloppier than mainframe or AS/400 access. To access a VAX from a CM/2 workstation, a CM/2 function known as the Asynchronous Communications Device Interface (ACDI) must be used. The ACDI uses the PC's COM ports to provide connectivity to asynchronous computers, such as the VAX. As you can see, we must now run an additional cable to the workstation to access the VAX. In the AS/400 and mainframe connectivity options, we could use the same network connection to access both hosts.

Other Things to Do

CM/2 can allow you to connect to multiple mainframes concurrently. You could, for example, be connected to a local mainframe in one 3270 emulation session and also be connected to a remote mainframe using another CM/2 3270 emula-

tion session.

APPN support was designed into CM/2. Routing SNA traffic between local segments of a LAN and over a wide-area link is very difficult to perform. The difficulty lies in the fact that SNA is extremely timing-dependent. If an SNA packet is sent to a workstation and the workstation does not respond within a specific time period, the workstation's mainframe session will be disconnected. As you can see, this poses a very real problem with wide-area links. APPN was designed as the routing mechanism for SNA and

promises to alleviate the current timing issues.

Advanced Program-to-Program Communications (APPC) support is built into CM/2. APPC is an architecture by which two programs can communicate with each other regardless of the type of computer platform they are running on. Here is a typical scenario that could use the power and flexibility of APPC: A mainframe-based hospital information system is used to gather information about incoming patients. Items such as the patients name, address, and insurance information are entered into

CM/2 allows host printing from applications such as CICS and JES328X to be routed directly to the end user's PC printer.

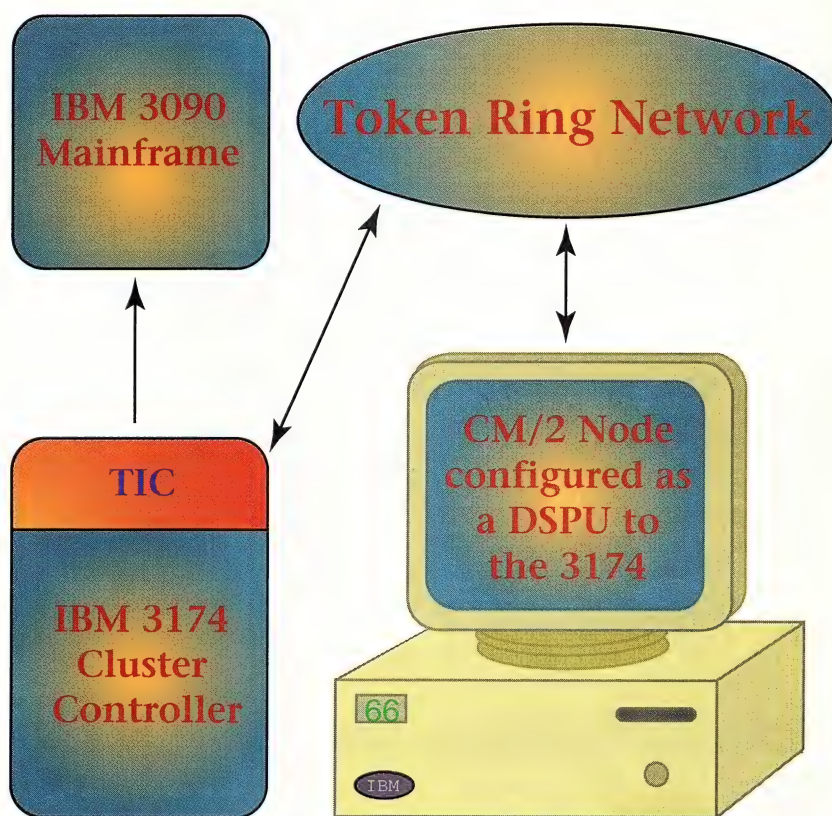


Figure 2: A typical LAN-to-mainframe connection.

the mainframe-based system and stored into a database. This same hospital also has a billing system that resides on a LAN. The LAN-based system requires access to the information stored on the mainframe to generate bills. A real-time interface could be developed that takes the information from the host and passes it to a PC attached to the LAN. The PC would then take the information and update a database on the file server. The best way to implement this type of system is to utilize APPC. To perform the connectivity between the LAN and the mainframe, an OS/2 CM/2 workstation is installed on the LAN. CM/2 is configured to access the host using one of the host-connectivity options. One of the mainframe sessions is defined as an APPC session. A program that gathers the patient data as it is written to the mainframe database is writ-

ten on the mainframe side. The record is then converted into the ASCII format and shipped to the CM/2 APPC session using the APPC facilities on the mainframe. A program that can connect to the CM/2 APPC session is also written on the OS/2 workstation. So, the mainframe sends a record to the APPC session, then the OS/2 program receives the record, updates its database, and sends an acknowledgment to the mainframe program. The actual mechanics of this system are much more complex than stated here, and perhaps the subject of another article.

CM/2 also provides several small utilities that can be used on the workstation. One of the most useful of these utilities is a product known as CMMOUSE. CMMOUSE allows the user to program the functions of the mouse buttons to interact with the mainframe 3270

emulators. For example, some IBM 3270 terminals use a light pen, where the user selects menu options by touching the light pen to the 3270 screen. CMMOUSE can be programmed to simulate this function. Using CMMOUSE, the user moves the mouse cursor to the desired menu option and clicks one of the mouse buttons.

CM/2 Workstation Requirements

The minimum workstation hardware requirements for CM/2 are 12MB of fixed disk storage and 1MB of memory in addition to the memory requirements of the base OS/2 operating system. To access a mainframe using an OS/2 CM/2 workstation attached to a LAN, another IBM product is required. This product is called Network Transport Services/2 (NTS/2). NTS/2 provides a transport that

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enables OS/2 and CM/2 to operate on a network. NTS/2 can be configured to support Token Ring, Ethernet, an IBM-PC Network, IBM 3174 Peer Communications Network, or any other network that complies with the Network Driver Interface Specification (NDIS).

You only need NTS/2 if you will be using CM/2 to access other systems via a LAN. For example, you would need NTS/2 if you plan to connect OS/2 CM/2 workstations to a mainframe using a LAN gateway. You do not need NTS/2 if you plan to access an IBM host using a 3270 board in the workstation with a coaxial cable attached to a 3174 cluster controller.

Remember that the predecessor of CM/2 was OS/2 Extended Edition. OS/2 Extended Edition bundled the Communications Manager product and the LAN transport functions. When CM/2

was released, the LAN transport functions were removed from the product and packaged and sold separately as NTS/2.

Brave New World

End users are demanding seamless access to data. Departments are purchasing application software based on its functionality rather than the type of computer platform it runs on. This approach is causing many corporations to break away from the monolithic world of the mainframe and to install mini computers and LANs. Corporations are struggling to obtain an edge over their competition. One of the areas that many organizations are looking toward to help them obtain this advantage is quick, reliable information access. CM/2 can help you reach this goal. All of the corporation's data can be accessed from a single terminal and printed

using a single printer. The end users are no longer required to move from one terminal to another to access different computer platforms.

John E. Johnston is the manager of technical support and communications at a major hospital in Pennsylvania. He designs and maintains cross-platform local and wide-area networks (WANs) using NetWare, OS/2, DOS, and Windows. He can be reached via CompuServe at 73473,2146

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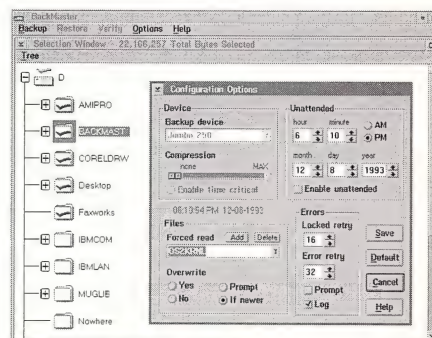
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Word Processors for OS/2

What's the best word processor for OS/2? BY DWIGHT CORNWELL

When the first PC was delivered over ten years ago, there was very little power available in word processors. In fact, some were just called "editors." The functional capabilities of word processors have evolved tremendously over the years to the point that they may now be the only package you need. Nearly all word processors currently include all of the word processing capabilities you could ever want: fonts, printer support, WYSIWYG, spell checker, thesaurus, graphic support, and grammar checkers. In addition they provide integrated drawing tools, spreadsheets, and their own macro language. If those features are not enough, they also provide Object Level Linking to other more sophisticated spreadsheet, drawing, database, and other tools.

Today's products have a magnitude more function than the original products and would have been daunting to use had there not been corresponding improvements in usability—improvements that address the needs of the novice, venturesome, and expert users. They include: unlimited undos, wizards (active on-line coaching), templates or layouts, automatic spell checking, automated style sheets, editable multi-page views, and the ability to open multiple files simultaneously. We have examined five of the leading word-processor packages: AmiPro for OS/2, WordPerfect 5.2 for OS/2, DeScribe, Word for Windows 6.0, and WordPerfect 6.0 for Windows.

We picked Microsoft Word for Windows because of its popularity

in the corporate environment. We added WordPerfect 6.0 for Windows after WordPerfect Corp. recommended it as the upgrade from WordPerfect 5.2 for OS/2.

How we tested

We tested and measured the graphics, complex document creation, printing, text and page layout, undo, and file-management features of the current crop of word processors. We used 66MHz 486 ISA PCs configured with 16MB of memory and 500MB disk drives. The printed output was handled by a Panasonic Laser Partner (KX-P4420) with 4MB of memory. OS/2 2.1 was the operating system. Our suite of test documents included one file that was 13MB in size.

What we found

The latest word processors have evolved into a lot more than the traditional word processors of yore. Most of them now include graphics, spreadsheets, and everything you think you might need to transcribe your words into printed matter.

Of the five products we tested, DeScribe requires the least amount of disk space (3.1MB) while WordPerfect for Windows, with all of its many options, consumes nearly 10 times as much disk space (33MB). WordPerfect 6.0 for Windows and Word 6.0 for Windows provide the widest variety of features and the best overall usability. Because of problems, Word 6.0 for Windows has a long way to go before it reaches acceptable quality.

As far as speed goes, DeScribe had the best overall performance,

which is probably because it is the only word processor we tested that had OS/2 as its original design point. All of the word processors are priced at \$495.

AMIPRO 3.0 FOR OS/2

If you restrict your word processor search to only native OS/2 programs, your search is an easy one. AmiPro 3.0 for OS/2 provides the best solution.

It does not have as many features as the latest Windows word processors from WordPerfect and Microsoft, but its spreadsheet, graphics, and other functions integrate easily with the Lotus Smart Suite. AmiPro also provides the best performance in manipulating text (cut, paste, undo, and so on).

Features

AmiPro is a full-featured word processor. In fact, it provides much of the feature set that is considered the domain of desktop-publishing applications. AmiPro 3.0 for OS/2 can produce many kinds of complex documents. And for the basic word processing features, it provides a rich set of capabilities.

Document creation includes style-sheet support. Paragraphs are supported with flexible style assignments that can be created in numerous ways. Formatting is similarly powerful, including support for modifying paragraph style, fonts, tabs, indentations, alignment, spacing, bulleted and numbered lists, table formats, and other writing-style variables.

AmiPro distinguishes between layout, outline, and draft modes, providing rich support for editing

Review

and viewing outlines. Perhaps the most powerful features are the text and picture frames, which AmiPro supports with modification of layout, text wrap, placement, margins, text editing, lines, shadows, and colors of the frame. Pictures can be imported or pasted in frames. Frames can be layered.

The program has both proofing and reference support as part of the environment, including spell checking, grammar checking, a customizable dictionary, and a thesaurus; tools for footnotes, table of contents, index, and glossary creation. It also includes support for math and science equations.

Usability

AmiPro's usability is characterized by the breadth of capabilities it provides and the flexibility it provides in accommodating the user's preferred interaction style (on-screen icons, keyboard commands,

style sheets). AmiPro provides the user with a choice of document views that includes full page, enlarged, facing pages, and custom views, as well as the ability to view multiple documents.

Performance

AmiPro displays respectable performance, and if one ignores its slowness in opening long documents, it can be noticeably faster in general use. It provides an edge in completing a range of tasks that include document cut and paste, zoom (in and out), bitmap importing, and some printing tasks.

Its performance profile is most like that of Word 6.0 For Windows across the set of document manipulation and printing tests, differing significantly on in-document cutting (39% faster than Word), importing graphics (41% faster than Word), and printing graphics (49% faster than Word).

DESCRIBE 4.0

If you are an OS/2 purist, DeScribe 4.0 is the word processor for you. It was designed from the beginning to be a word processor that would exploit the OS/2 environment. It definitely has the look and feel of an OS/2 application. When compared to the rest of the word processors in our test suite, it provides the best overall performance and exploitation of OS/2. However, when function and usability are considered, DeScribe has some catching up to do.

Features

One of the unique features DeScribe provides is that it has unlimited levels of undo. The interface is very intuitive, using a bar that the user can move back and forth until the desired version of the document is recreated. This word processor is the only one that offers this feature.

Table 1: Word-processor features

	AmiPro 3.0	DeScribe 4.0	WordPerfect 5.2 for O/S2	WordPerfect 6.0 for Windows	Word 6.0 for Windows
List Price	\$495	\$495	\$495	\$495	\$495
Native OS/2	yes	yes	yes	no	no
Minimum Disk Requirements	3.5MB	3.1MB	4.5MB	10.5MB	8
Maximum Disk Requirements	16MB	11MB	16MB	33 MB	26MB
Command Line	no	no	no	no	yes
Comments to Text and Vice Versa	no	no	yes	yes	yes
Maximum number of Columns	8	20	24	24	100
Number of Undeletes	4	unlimited	3	3	100
Number of Dictionaries	1	3	1	1	4
Grammar Checker	yes	no	yes	yes	yes
Auto-Numbered Footnotes	yes	no	yes	yes	yes
Automatic Envelope Formatting	yes	no	yes	yes	yes
Toll Free Support number	no	yes	yes	no	no

Review

DeScribe provides a dual search-and-replace capability that enables you to have two unique searches performed at the same time. This ability might be a good example of exploiting OS/2's multithreading capability, but how many people really need it?

Even though DeScribe provides some unique features, it is missing some significant ones that traditional word processors provide. Footnotes are not automatically supported. You can manually number and place footnotes on the bottom of the page but this method is definitely a step backwards from what is currently available in other word processors. Tables created in DeScribe do not support arithmetic functions. DeScribe requires you to do them manually or link to a spreadsheet program via Dynamic Data Exchange (DDE). Envelope printing is another area where a lot of manual intervention is unnecessarily required.

Usability

DeScribe's user interface appears to have been targeted for the sophisticated rather than the novice user. Navigation though its menus is not always intuitive or consistent. And in some cases, there are no short cuts through the menus.

The unlimited undo feature certainly improves its ease of use. The Style Status menu is another

unique feature. It informs you of the status of every format option applied to a particular highlighted section of text.

On the negative side, you can't deactivate the beep you receive when an incorrect key is depressed. Also, the print-preview function displayed a format that did not correspond to how the document actually printed. Fortunately, the document printed correctly.

Performance

Here is where DeScribe demonstrates its exploitation of OS/2. DeScribe is the performance champ for our test suite of word processors. It had the best overall score for our 17 performance test categories and was the outright winner in eight of the categories. However, surprisingly, DeScribe was unable to complete the open large file (13MB) test while the rest of the products did so successfully.

WORDPERFECT 5.2 FOR OS/2

Why would you choose WordPerfect 5.2 for OS/2 over WordPerfect 6.0 for Windows? Maybe your organization is still using WordPerfect 5.2 on the rest of the platforms. Maybe you only want to use native OS/2 applications. If so, AmiPro 3.0 is faster, has more function and a better user interface than WordPerfect 5.2 for OS/2. If not, then WordPerfect 6.0 for Windows is your best solution.

Features

WordPerfect 5.2 for OS/2 has more features than DeScribe but fewer than all the other word processors in our test suite. It comes with its own printer drivers for faster printing (which we did not test) but WordPerfect 6.0 for Windows also has its own printer drivers.

Usability

WordPerfect 5.2 for OS/2 provides some usability advantages over WordPerfect 6.0 for Windows. Background printing (another OS/2 thread) is enabled so that you are returned to your editing screen as soon as the document is sent to the printer. If you are using IBM's High Performance File System (HPFS), you can use as many as 254 characters to name your document. Of course, WordPerfect 5.2 for OS/2 also supports the OS/2 Workplace Shell (dragging and dropping).

Performance

WordPerfect 5.2 for OS/2 had the slowest performance of the word processors we tested (including WordPerfect 6.0 for Windows running under OS/2). In the graphics printing test case, WordPerfect 5.2 for OS/2 was three times slower than AmiPro. WordPerfect 5.2 for OS/2 was faster than WordPerfect for Windows in handling text operations (cut, paste, font changing, and printing).

Table 2: Performance (timed in minutes:seconds).

	Ami Pro 3.0	DeScribe 4.0	WordPerfect 5.2 for O/S2	WordPerfect 6.0 for Windows	Word 6.0 for Windows
Installation Time	12:28	10:14	9:16	15:54	19:34
Startup Time	0:21	0:8	0:16	0:19	0:19
Text Only	1:26	0:55	1:0	1:33	0:43
Text and Graphics	1:1	1:0	3:3	2:9	1:15
Large Document (13 MB)					
Open	16:01	*	10:02	6:23	:01
Saving as	5:08	*	1:50	1:15	4:44

*DeScribe could not successfully open the large file

Review

WORDPERFECT 6.0 FOR WINDOWS

WordPerfect 6.0 for Windows was the overall winner. It provided the best combination of functions, usability, quality, and performance. The depth and breadth of all the features can be overwhelming. WordPerfect 6.0 for Windows operates under OS/2 flawlessly. (Note: It must operate in 386 enhanced mode while running under WIN-OS/2.)

Basics

The minimum installation size of WordPerfect 6.0 is a hefty 10.5MB, while the maximum-sized configuration comes in at a whopping 33MB! This memory requirement reflects the impressive volume of features WordPerfect 6.0 for Windows offers.

Features

WordPerfect 6.0 for Windows' online help features have an edge over the other packages, especially in ease of accessing guidance (more than just "help") in a way consistent with the user's frame of reference. "How do I do ...?" inquiries map exactly onto what the user is trying to accomplish in requesting help (that is, figure out how to accomplish the next step in the word-processing activity).

WordPerfect 6.0 users may be interested in the availability of TrueType fonts. Adherence to the OLE 1.0 standard includes drawing and charting applications. (OLE 2.0 is not supported.)

The page-layout feature set is flexible and powerful, supporting partitioning of physical pages into user-specified logical pages. File management is integrated with WordPerfect 6.0.

While WordPerfect 6.0 has adequate envelope-handling capabilities, it provides more versatile label handling than the competition. In

addition, it supports development of address databases that simplify the production of mailings.

Usability

WordPerfect 6.0 gives you the ability to annotate specific points within a document with comments that do not appear in line—a feature that improves readability so much that authors may reap additional benefits from the ease of documenting their supporting thoughts and rationales.

Customization is easily accomplished in WordPerfect 6.0 for Windows. It has a powerful button bar and power bar that can be customized with 81 different features. The status bar provides 19 options, such as time, date, and page position. It also has a customizable keyboard interface.

WordPerfect 6.0 for Windows provides the most direct support for program macros. Using a macro template, users can develop their own custom macros. Those macros are then available for integration with documents.

Performance

WordPerfect For Windows is not fast. However, for most tasks, it provides acceptable performance. One noticeable difference that could become tedious is the significantly longer print time: three times that of Word 6.0 and 2.3 times that of AmiPro. Font changes required about twice the execution time of the other word-processor applications. Document cut and paste, font changes, and bitmap importing all took significantly longer than that of the competition.

WORD FOR WINDOWS 6.0

Word 6.0 for Windows would have edged out WordPerfect 6.0 for Windows as the best word processor for OS/2. However, quality problems dropped it to last place.

Microsoft will undoubtedly fix these problems, as they did with Microsoft Access. With problems like these in the version we tested, we hope Microsoft will provide a free update that fixes the current defects. In general, however, Word for Windows 6.0 has tremendous functionality and usability complimented with good performance.

Quality

The version of Word for Windows 6.0 we used for the evaluation had serious defects, ones that would be intolerable in almost any user's situation. Because quality is such a fundamental requirement for word-processing applications, Word 6.0 is rated here far below its capabilities relative to the competition. These quality problems were consistent whether windows ran under native DOS with Windows or under OS/2 with Windows. The most serious problems were application errors in changing fonts and file saving that caused unrecoverable file loss.

Features

Without question, Word 6.0 has a rich feature set, and those features are easier to use. In fact, the superior usability of this package increases the value of features that were available in Version 2.0.

Support for OLE 2.0 (Microsoft's object linking and embedding standard for combining diverse data types in a single document) is especially valuable for those who use tools from numerous vendors in the normal course of their work on the PC.

One class of feature that distinguishes Word 6.0 from the other word processors is its support for automatic completion, correction, and enhancement of text passages. Features such as AutoCorrect and the subtler anticipation of the user's intentions (by remembering recent



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OMOS2

Review

past activities) are complemented by support for manual confirmation or rejection of the automation support and customization of templates (such as those available in the Style Gallery).

For business users, Word 6.0 provides adequate envelope-printing capability. However, it does not support font selection on labels, restricting label printing to the New Roman Times font.

Usability

Word 6.0 for Windows is designed for use even by less experienced users. It can be set up for unsophisticated users, who are likely to take full advantage of the user-interface support features such as toolbars and Wizards. Alternatively, it can be set up to meet the expectations and high-powered skills of word-processing experts.

Accommodating this range of use in a single product makes it particularly adaptable as the user becomes more competent and knowledgeable. For example, the SmartWizard (as well as CalendarWizard, AgendaWizard, LetterWizard, and FaxWizard) asks the user relevant questions and provides options within the style format for automated creation of styles from the most standard to complex formatted documents.

The package includes a set of predefined toolbars that simplify the user's interface to many of the connecting applications such as mail, database access, and more integral capabilities such as formatting and form manipulation.

Attention has been paid to the editor and word-processor user's long-standing plea for undo/redo functions that extend far enough back to capture where the problem occurred, not just where the user realized it. Providing 100 levels should satisfy most users.

Word for Windows can also boast the best spell checker that

offers "auto correction." You can give it a list of commonly misspelled words and it will correct them automatically.

Beyond its good on-line help feature's attention to the user's need for different kinds of help, it includes "Tip Of The Day," which gives the product a continuous learning dimension.

Performance

Usability contributes to user productivity and, in that sense, to the perceived performance of the Word 6.0 application. We concentrate here on the relative speed of execution of standard word-processing tasks.

Word 6.0 for Windows was orders of magnitude faster in opening large files. It is similarly fast in opening two-page layout files. In most other tests, it performed comparably to the other word-processing applications. Like AmiPro, Word 6.0 supports background printing. In fact, text-document printing with Word 6.0 was nearly 30% faster than with AmiPro and nearly 70% faster than WordPerfect 6.0 for Windows.

Text selection (click and drag until you get what you meant to select) in most cases will be more efficient, since Word 6.0 assumes you generally want to select whole words. Again, the feature can be disabled as desired.

Changing views (for example, switching to a Print view) is very slow. A simple view-change request does not happen in real time. Similarly, edit changes are delayed, while all the other word processors tested show editing results in real time.

THE FINAL WORD

First of all, none of the packages is significantly better than the others. They may include a unique feature or two that you might find intriguing, but if you are already a

WordPerfect, Word, AmiPro user, or DeScribe user, you are very likely going to stay with your present word processor.

For those of you who are ready to forsake your present package or have not settled on one, there are some great packages to choose from. The best OS/2 word processor available is WordPerfect for Windows 6.0. If Word for Windows 6.0 was a more stable product, it would have barely edged out WordPerfect for top honors. Yes, both of the Windows word-processing packages are better (assuming Word 6.0 for Windows' quality problems are remedied) than the native OS/2 products we tested. While running Windows under OS/2, the overall performance of the windows word processors was nearly as good as the performance of the native OS/2 word processors. Who would want to buy WordPerfect 5.2 when you can purchase WordPerfect 6.0? The 6.0 Windows versions of Word and WordPerfect have a lot more breadth and depth in function and usability than the present native OS/2 word-processor packages. Certainly, the native OS/2 packages provide more synergism and exploitation of the OS/2 environment (for example: OS/2 fonts instead of Windows fonts, fully 32-bit enabled, and so on), but when it comes to word-processor software, just how important those features are depends on your particular requirements.

If you are committed to native OS/2 applications, AmiPro provides the best solution over WordPerfect and DeScribe. AmiPro exploits OS/2 with an excellent user interface and abundant functions. AmiPro has the added bonus of being a part of the OS/2 Smart Suite of applications from Lotus.

In response to customer feedback, Lotus will issue a maintenance release of AmiPro 3.0 for OS/2. This release, which is said to address

Review

many of the performance issues cited in this article, will be available in the first quarter of this year.

DeScribe provides the most visual and internal exploitation of OS/2, but appears to be targeted for the sophisticated user, while the rest of the packages we tested provide usability and function for sophisticated and novice users.

Dwight Cornwell is a senior consultant with QDSS Consulting in San Jose, Calif. He has nearly 30 years of experience in the computer industry. QDSS Consulting specializes in developing metrics for evaluating products and strategies. Contact him via MCI at 565-7470

RESOURCES

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Word Processing Division
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DeScribe 4.0 (\$495)

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Word for Windows 6.0 (\$495)

Microsoft Corp.
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MultiMaster

Create your own multimedia database

Commix is announcing the release of their multimedia database authoring tool, MultiMaster. MultiMaster is a 32-bit program with both Workplace Shell and full screen session interfaces. It supports image formats including: Targa, PCX, TIFF, AVC, GIF, BMP, and Kodak Photo CD. MultiMaster uses a dBase back end to link audio, video and pictures into a multimedia presentation. Once a presentation is compiled, it can be exported to either Windows, Macintosh, dial-up, or CD-I runtimes. MultiMaster is available from Commix for \$195. Commix can be contacted at (800) 226-6649 or (703) 356-9858, and their fax number is (703) 356-6148.

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Commix's MultiMaster database

TalkThru 2.1

WPS Terminal program for OS/2

Software Corporation of America is releasing their Workplace Shell terminal program, TalkThru. Available in both 16 and 32-bit versions, the program allows connectivity through either a com port, ACDI, a shared serial device on an OS/2 LAN Server, NetBios or IBM TCP/IP. The program also supports a variety of terminal emulations such as ANSI and TTY, and a variety of file transfer protocols such as ZMODEM, IBM IND\$FILE, and CompuServe B+. TalkThru's scripting language supports DDE, and is designed to work with the IBM EHLLAPI interface. Software Corporation of America sells two versions of TalkThru. A text based

version which has all features except VT340 emulation has a suggested retail price of \$190 and a graphics version which retails for \$350. Both products are available through retailers or direct from SCA at (203) 359-2773.

READER SERVICE NO. 160

Stacker 1.1

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Stac Electronics is releasing a new version of their disk-compression product, Stacker for OS/2. Stacker for OS/2 uses Stac's own Stacker LZS to compress all data on any FAT drive. The OS/2 version of Stacker comes with utilities from both the DOS and

OS/2 versions of the device drivers and utilities. Support for extended attributes, Boot Manager, and Dual Boot systems are built in. New to version 1.1 is the ability to decompress Double-Space and SuperStor/DS volumes into Stacker volumes. Stacker 1.1 is available for a suggested retail price of \$199. Users of version 1.0 can upgrade directly from Stac for \$19.95. Stac Electronics can be contacted at (800) 522-STAC; (619) 431-7474 or by fax at (619) 431-0880.

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PrintBar 1.0

Pass the bar test

Bear Rock Technologies announces the availability of their PrintBar Bar Code Fonts for Windows and OS/2. The bar code fonts are now available in TrueType and ATM PostScript formats. Bar code support includes Code 39, UPC, EAN, ISBN, Bookland EAN, Interleaved 2 of 5, and POSTNET/FIM. All of these font packages are available from Bear Rock Technologies for prices starting at \$79. For information call (800) 232-7625 or (916) 672-0244, or fax (916) 672-1103.

READER SERVICE NO. 162

Unite 2.0

Manage your documents through OS/2

Cirrus Technology is shipping the 2.0 release of their information database management tool, Unite.

Just Announced

This Workplace shell program allows you to scan, view, index, search, retrieve, scan, and fax images from a variety of sources. Unite is designed for use in large office environments and can also be customized for specific tasks. Connectivity is available for Novell, LAN Server, LAN Manager, Banyan Vines, DEC, SQL/DS, OS/400, and DB2 environments. Unite comes with both client and server versions and provides support for scanners and optical storage drives.

Unite requires OS/2 2.1 or greater and is available directly from Cirrus Technology. Pricing depends on the configuration. Cirrus Technology can be contacted at (301)698-1900 or by fax at (301) 698-1909.

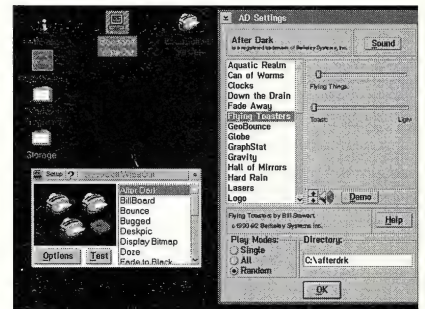
READER SERVICE NO. 163

After Dark Module for Wipeout 1.0

The Toasters are coming! The Toasters are coming!

Bocasoft is releasing an extension for their OS/2 screen saver, Wipeout, that will allow it to run the modules made for Windows After Dark. Like Bocasoft's earlier add-on module for Deskpic screen-saver modules, After Dark will be added to the main menu of Wipeout where a Win-OS/2 After Dark server is launched upon activation. The module will be available to download free of charge on BocaSoft's Library on CompuServe or on disk through Indelible Blue Inc. at (800) 776-8284 or (919) 878-9700 for \$5 shipping. The module requires Wipeout to function and any After Dark modules must be purchased separately from Berkeley Systems. Wipeout is available from retailers for a suggested price of \$59.95. Bocasoft can be contacted at (407) 392-7743 or by fax at (407) 368-7799.

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Bocasoft's extension for their OS/2 screen saver runs Windows After Dark modules.

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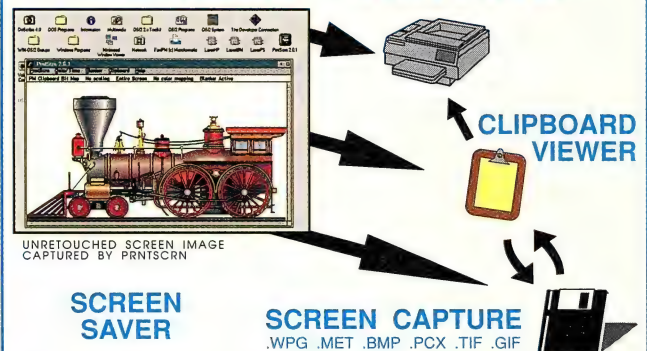
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Just Announced

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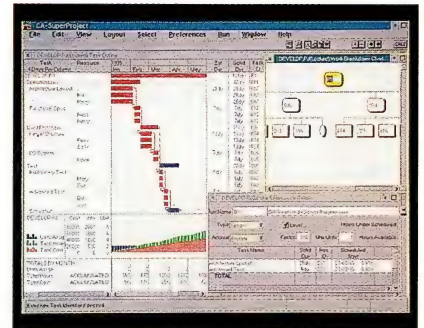
Take charge of the Team

Computer Associates is now shipping CA-SuperProject for OS/2, a native 32-bit Workplace shell project management application. CA-SuperProject features Help-Assist mode, experience modes, pop-up forms, and Project Manager's Assistant.

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CA-SuperProject for OS/2.

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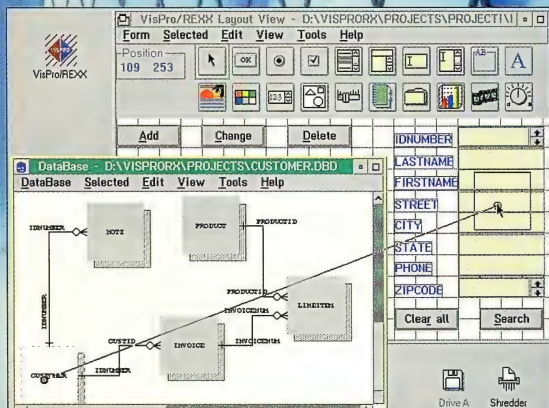
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Reader Service No. 35



Programming with functions

PACKAGING TOGETHER CODE THAT PERFORMS A PARTICULAR TASK BY ALEX LANE

In the first two installments of this column, you were introduced to enough REXX features to do sequential processing, looping, and branching, the three basic techniques used to build all computer programs. This month, we'll build on this foundation and learn to make use of functions in our programs.

Functions allow you to package code that performs a particular task. For example, if you needed to write an if statement that checks whether or not a year is a leap year—being that a leap year is any year that is evenly divisible by four, unless it is also evenly divisible by 100 but not by 400—we can write code as shown in Fragment 1.

If you recall from the first REXX article (The REXX Column, Premier Issue p.77) // means "divide and return remainder", & means "and," and \= means "not equal to." So, in English the first line would read "if year divided by 400 has a remainder of zero or if year divided by four has a remainder of zero and year divided by 100 has a remainder of non-zero then...

If you had to perform this test several times in your program, you could simply cut-and-paste the expression wherever you needed it. However, several potential problems can occur with cutting and pasting.

First, there is always the chance of making an inadvertent error while editing. Or worse, you may find a bug in the original code, and

**This month, we'll
build on our foundation of basic
techniques and learn to
make use of functions in our
programs.**

then have to search for every place in your program where a correction is needed. Not only is this procedure tedious, but it's also fraught with opportunities for editing error, and the potential to miss places that need correction. Then, any number you want to test must be assigned to the variable *year*, requiring the addition of possibly awkward code. In addition to these problems, reused code can be quite sizeable, making the cut-and-paste

approach look even less attractive.

Packaging code into functions is easy. First, go to the end of your program and add the line **exit**. Until now, we've been writing short programs that terminate once all the lines have been executed. We will add function code after the main portion of the program, and **exit** will tell REXX to stop executing the program after it's finished and before it starts to execute the procedures (which, if it were to happen, would result in a processing error).

Now, a line or two after the **exit** command, we'll create a **checkLeapYear** function, the syntax for which is shown in Fragment 2.

Here, **checkLeapYear** is the function name. The colon after the name identifies this line as the place where the function code begins. The **procedure** keyword identifies **checkLeapYear** as a function. (In REXX, functions are basically procedures that return values. The distinction is not important to us right now.)

The **arg** statement takes what is

Fragment 1:

```
if (year // 400 = 0) | (year // 4 = 0 & year // 100 \= 0) then
/* execute if a leap year */
else
/* execute if not a leap year */
```

Fragment 2:

```
checkLeapYear: procedure
arg year
return (year // 400 = 0) | (year // 4 = 0 & year // 100 \= 0)
```


called an argument string—created by REXX when the function is called—and assigns it to, in this case, the variable **year**. (This statement behaves similarly to that of the **parse** command we've seen before.) **year** is then used in evaluating the expressions in parentheses, and the result (either a one or a zero, denoting true or false respectively) is returned to the point in the program where the procedure call took place.

We can use the **checkLeapYear** function in our original code by rewriting it to look like, for example:

```
if checkLeapYear(1776) then
/* execute if a leap year */
else
/* execute if not a leap year */
```

The function name is followed by the argument list—in this case, consisting of only one argument—enclosed in parentheses. There should, by the way, be no space between the name and the opening parenthesis.

When the function is called, the argument string passed to the function code will contain 1776. Since 1,776 is evenly divisible by four but not by 100, the function will return a one, in effect, transforming the code to read **if 1 then**, causing the **if** statement to execute the code for a leap year.

It is important to keep in mind that in REXX, variable names inside of functions refer to a different set of variables from those used in any other procedure or the main part of your program. For example, let's say your code looks like this:

```
year = 1994
anno = 2001
if checkLeapYear(anno) then
say anno 'is a leap year'
exit
```

Once REXX starts to execute the code for the **checkLeapYear** function, the variables **year** and **anno** in the main code cease to exist as far as

Fragment 3:

```
/* COMPOUND.CMD */
say 'Enter annual interest rate, principal, and term (in days):'
parse i principal term
if i > 1 then i=i/100
dailyRate = i/365
endResult = cIntCalc(principal, term)
say principal 'held for' term 'days'
say 'at' i*100 '% annual interest yields' endResult
exit
cIntCalc : procedure expose dailyRate
arg amt, days
return amt*(1+dailyRate)**days
```

the function is concerned. The value of **anno** is passed in the argument string and assigned to the function's **year** variable. This assignment does not affect the value of **year** in the main program. Although the variables have the same name, they exist in different environments. Once the function finishes executing and returns a value, its **year** variable disappears, while the original variables in the main program's environment are restored unaffected.

Some may think this scheme is a pretty convoluted way of keeping track of things, but it has two major advantages. First, by isolating variable names within functions, you avoid having to globally keep track of variable names to make sure they don't interfere with one another. Second, since calling a function creates a separate set of variables that are independent of all other variables in your program, you can write functions that call themselves (so-called "recursive" functions).

Sometimes, however, you want a function to know about a variable in another environment. REXX allows functions to access variables in the environment from which the function call was made by using the **expose** option to the **procedure** keyword.

For example, if you were writing a financial calculation program, upon entering a yearly interest rate, you divide it by 365 and store the result in the variable **dailyRate**. You

now want to use that variable in a function that calculates compound interest. See Fragment 3 for a simple program that illustrates the setup.

In this example, the user enters the requested information, the daily interest rate is then calculated and the function **cIntCalc** is called with only two arguments. Due to the **expose** statement, the 'daily Rate' variable is visible from inside the procedure.

The exposure of variables is limited. If, for example, **cIntCalc** called a second function during its execution, the variable **dailyRate** would not be visible inside that other procedure, unless it was explicitly exposed in the code for the second function.

On CALL

Another way to execute functions and procedures within REXX uses the **CALL** command. Calling the **cIntCalc** function using **CALL** would look like this:

```
CALL cIntCalc principal, term
```

Two major differences between this form of calling the function and the form in the example above are: first, physically, the lack of parentheses around the arguments to **cIntCalc**, and second, no direct return value from the function. Instead, the value returned by the function is stored in a special variable called **result**. To assign the returned value to the variable **endResult**,

you'd have to add the line:

```
endResult = result
```

This method of calling functions is used primarily with functions that don't return a value or where you aren't interested in the return value.

CALL can also be used to transfer execution of your program to internal routines, external routines that reside in separate files, or a built-in REXX routine.

Internal routines

An internal routine looks very much like a function, except the **procedure** keyword isn't used. As a result, the code executes as it does in a function, except that all program variables are visible to the routine. Routines can return a value to the calling point, or simply return, just as functions do.

Unlike functions, routines don't have to return, they can also **CALL** other parts of your program, as in the following example:

```
/* CALL1.CMD */
i = 'hippo'
again:
if DATATYPE(i)=NUM then
  say i 'squared is' i*i
else
  call bad_i
exit
bad_i:
  say 'i is not a number'
  say 'Enter a number:'
  parse pull i
  call again
```

The first time through the code, the call to **DATATYPE** returns **CHAR** (because **i** is a string), resulting in a call to **bad_i**. Recall that, since **bad_i** is not a procedure, all variables in the code's environment (here, **i**) are known. Once the user enters a new value for **i**, the code makes a **CALL** to jump to the label **again**, and resumes execution.

Coding using internal routines is a technique that should be used

Fragment 4:

```
/* COMPND1.CMD */
say 'Enter annual interest rate, principal, and term (in days):'
parse i principal term
if i > 1 then i=i/100
dailyRate = i/365
call cIntCalc principal, term, dailyRate
endResult=result
/* the following line of code may be substituted for the previous two lines:
endResult = cIntCalc(principal, term, dailyRate)
*/
say principal 'held for' term 'days'
say 'at' i*100 '% annual interest yields' endResult
exit
/* CINTCALC.CMD */
arg amt, days, rate
return amt*(1+rate)**days
```

sparingly and with deliberation. The major disadvantage of using routines instead of functions is that you have to keep track of variable names to make sure you don't accidentally change the value of a variable that shouldn't be changed.

Having to keep track of names wastes your time when writing code, and makes reusing code in other projects much more difficult. Also, extensive use of **CALL** to jump around in your code results in "spaghetti" programs whose logic is so convoluted that it's nearly impossible to figure out what's going on.

External routines

You don't have to put all your code in one file. You can place functions in separate **.cmd** files and **CALL** them, whereupon REXX will find the appropriate file, execute the code, and return the appropriate value (if anything's returned).

Code located in external files acts as if the **procedure** keyword is in force, that is, all variables from the calling environment are hidden. In addition, you can't **expose** variables, so that all the information needed to execute the function must be passed in the **CALL** instruction. Our compound interest example could be coded as two separate files as shown in Fragment 4.

As you can see, this code is very

similar to that presented earlier. **dailyRate** is not exposed in the interest calculation and must be passed in via an argument string. Another difference in the code is that the name of the file containing the interest-calculation code is the name of the function that's called from the main program.

The benefit of this type of program organization is that it gives you the ability to write highly reusable code that can be stored in separate files.

In closing...

We'll present built-in REXX functions in future columns. If your curiosity is insatiable, you can examine the REXX Information in the file **rexix.inf** using OS/2's View utility.

Functions hide the details associated with performing frequently encountered tasks and, in this capacity, serve as basic building blocks for writing well-organized code. In addition, once you've written a function, you've essentially put together a piece of functionality that can be used in other programs.

Alex Lane is a Colorado-based consultant and writer, and a contributing editor to Software Development magazine and AI Expert magazine. He can be reached via CompuServe as 75715,1370, or Internet as 75715.1370@compuserve.com.

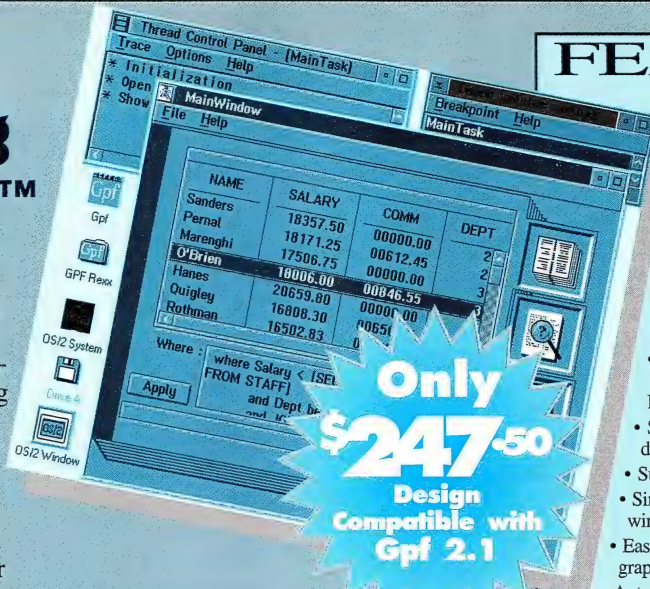
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OS/2 Meets Pen Computing

IS THE PEN MIGHTIER THAN THE KEYBOARD? BY MATT TRASK

IBM has recently released its Pen for OS/2 product that supports a variety of pen devices with OS/2 2.1. What new opportunities does this product provide to experienced pen users moving from other environments? And, is it possible to continue using pen-aware programs from Windows?

I used to think pen input for computers was useful only to UPS truck drivers. The technology seemed appealing, but didn't really work very well. A year ago at Fall Comdex my opinion changed when I had an opportunity to try out the Microsoft Pen Extensions for Windows (PenWin for short) on a laptop computer. The handwriting recognition was not perfect but it worked well enough. With a little practice I found I could operate my Ascend daily planner almost as well by pen as I could by keyboard.

I've been using a Dauphin DTR-1 as my main pen system for some time. It packs a 486 CPU, 6MB of RAM, and a 40MB hard disk in a package that's not much larger than a VHS videotape. Weighing less than two pounds, the DTR-1 is small enough to replace my Franklin Day Planner in the outside pocket of my briefcase.

Vendors of personal information manager (PIM) products seem to have recognized the value of pen technology and many of them now support PenWin. PenWin permits handwritten data to be recognized and input as if it had been typed on a keyboard. A collection of stan-

dardized *gestures* are used to edit and manipulate data by pen.

My favorite pen-aware program is NoteTaker from Ink Development Corp. Unlike other PIMs that merely take a ride on the recognition engine, NoteTaker truly exploits the capabilities of this new medium. Other PIMs usually discard the "ink" that is created by the pen digitizer after recognition occurs. NoteTaker is capable of saving the ink as a new data type that can be managed and manipulated directly. A Smart Stamp tool is used to label handwritten notes so that they can be sorted and searched at a later time. For example, the ToDo stamp has a priority and date associated with it and all ink selections marked with it can be sorted accordingly. Compared with other pen-aware applications, this is the definitive example of pen technology.

I recently started using PenOS/2 on an IBM ThinkPad 750P. Most of the gestures I learned with PenWin work the same way on PenOS/2. PenOS/2 also added many new gestures that provide alternative ways to manipulate pen data. For example, a "dotted K" character pops up an on-screen keyboard that can be used to type characters directly. Windows provides an on-screen keyboard but it has to be run from an icon.

Naturally, the first thing I wanted to do when I got this new computer was to load and run NoteTaker. Unfortunately, there is officially no migration path from PenWin to PenOS/2. The two sys-

tems differ significantly enough that PenOS/2 is unable to support PenWin applications directly.

Past experience with OS/2's support for unusual Windows devices indicated that it might just work. Besides, it gave me an opportunity to test the new OS/2 for Windows package that I picked up at Comdex to see if, in fact, it lived up to its billing of being able to run a pre-installed Windows system.

This wasn't an experiment I wanted to try on my main computer at work, so I assaulted the 486 VL-bus clone system I have at home. I replaced the video adapter with a Kurta Video Tablet System (KVTS). The KVTS is a 9.5 inch diagonal grayscale LCD screen that supports VGA resolution and uses a cordless pen for input. It comes with its own video adapter that can drive a Super VGA monitor as well as the pen tablet. Microsoft's PenWin extensions come bundled with the tablet, and I soon had the whole thing working.

I then installed OS/2 for Windows from a CD-ROM drive and set about the task of making it work with the pre-installed Windows. The performance and seamless operation with Windows 3.1 was equivalent to what I previously experienced with the full OS/2 2.1 package. For reasons that I cannot explain, after adding the PenWin extensions, the performance was terrible. It worked only in a separate session, and then, so badly that it really wasn't worth doing at all.

Migration Path

Many hours spent tweaking the Win-OS/2 settings provided no joy—the cursor still lagged far behind the pen tip and most of the ink was lost.

Finally, when I was about to give up, I hit upon the idea of using Windows for Workgroups (WfWg) instead of Windows 3.1, which I had originally decided not to use because I was afraid that it would be different enough from 3.1 that OS/2 might not work with it at all. To my great surprise, it not only worked, but it worked extremely well. With absolutely no tweaking of the Win-OS/2 Settings I got NoteTaker performance and responsiveness identical to operation under PenWin on the same machine.

The only modification that was required was a change to the [boot] section of *system.ini*. OS/2 for Windows adds *fdisplay.driv=* and *sdisplay.driv=* in addition to the standard *display.driv=* statement. The two additional entries needed to be

changed from *vga.driv* to *vgap.driv* to match the changes made by PenWin and suppress an error dialog.

After three days of serious hacking, I've shown that there really is a migration path for pen users. Naturally, this solution is not a substitute for PenOS/2—it only works with PenWin programs while running in a separate full-screen session. Why would a satisfied PenWin user want to move up to PenOS/2? Among other reasons, there's a major compatibility problem between PenWin and Pen-DOS. It's an either/or proposition because any attempt to operate Pen-DOS inside a Windows DOS box causes an immediate crash of the Windows system. PenOS/2, on the other hand, provides seamless pen operation of OS/2, Windows, and DOS programs.

And just a word of caution in case you haven't yet taken the plunge into pen computing: If you're thinking about adding a pen tablet to your home computer, be sure the

kids don't find out—if they do, you'll never get a chance to use it.

Matt Trask is the President of Communica, Inc., a system software development firm based in Cape Cod, Mass. that specializes in device drivers for OS/2 and other advanced operating systems. He can be reached electronically as matt.trask@bix.com.

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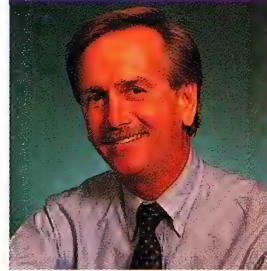
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Reach Out and Meet Someone

HOW TO USE OS/2 USER GROUPS

BY DICK CONKLIN



PC clubs have been around since the mid-1970s when hobbyists met to show off the latest computer kits and swap BASIC programs. Silicon Valley's Homebrew Computer Club was an early hang-out for microcomputer pioneers who bought the MITS Altair and wrote some of the first shareware—simple programs handed out or exchanged with other members free of charge or for a small donation.

Today's clubs are often more specialized, attracting users of various popular hardware and software products. While some are general-purpose computer clubs covering a broad range of topics, others specialize in products such as the Macintosh, IBM PC, or OS/2.

User groups, like other community organizations, have regular meetings, elections, officers, newsletters and membership dues, but formalities are usually kept to a minimum. People join user groups to learn, and to keep themselves informed in a rapidly-changing industry. The business portion of a monthly meeting is dispensed with quickly to commence with the evening's feature entertainment—a product demonstration by the regional rep from Borland, a talk by the author of a new book on OS/2, or a member's own tutorial on client/server systems. Vendors,

anxious to win the hearts and minds of club members, will often place ads in the club newsletter and donate door prizes to be raffled off at meetings.

Many clubs have their own bulletin board systems (BBSs) for use by members. A BBS consists of a PC, modem, BBS software, and a dedicated telephone line. The BBS PC stays in auto-answer mode until someone calls it and signs on. Club BBSs, like others, provide a forum where members can discuss various topics, upload and download shareware, and receive meeting notices.

Demoware and Shareware

The software available on club BBSs consists mostly of demonstration versions of real software products and shareware. Demoware can range from a sequence of real-looking screens to actual running code with key functions such as file saving or printing disabled. Vendors often provide demo software to give a feel for the real thing, which (they hope) you'll then go out and buy.

But shareware, which originated in the early PC clubs, is the mainstay of most BBSs. Thousands of software tools, utilities, applications, and data files are passed from member to member, BBS to BBS. All shareware carries a notice stating their rules of distribution and most

request a reasonable donation to the author, if the recipient should find the program useful.

SIGs Versus UGs

Often, a general-purpose club will form a special-interest group (SIG) if there seems to be enough interest in a product. SIGs usually meet separately from the main organization, so that a large club may have a Windows SIG, OS/2 SIG, and so on. Popular SIGs are sometimes spun off as new user groups.

IBM PSP User Group Relations

IBM's support for PC user groups dates back to the PC itself. In 1981, the father of the IBM PC, Don Estridge, realized the importance of user groups and established a formal support group. Many new clubs were launched with IBM's help, club officers were trained, and newsletters were exchanged.

A national BBS was set up for the use of PC club officers. It offered a list of current user groups, a place to exchange ideas, and a large shareware library. Today, that BBS has been folded into IBM's Personal Computer Company BBS, which can be reached via modem at (919) 517-0001. You can also find IBM's PSP User Group Relations on CompuServe (GO OS2USER).

A speaker's bureau helps locate IBM executives and local employees qualified to speak and demonstrate products at club meetings.

IBM also played a key role in the formation of the Association of PC User Groups (APCUG) by sponsoring several events and supplying hardware and software for APCUG's Globalnet BBS.

Today, IBM's Personal Software Products (PSP) User Group Relations takes on a strong role of advocacy and support of OS/2 among user groups and SIGs. User group officers get toll-free access to the IBM BBS and early distribution of some OS/2 products. The 1981-

era newsletter has evolved into a quarterly magazine.

If you haven't already joined a local OS/2 user group, it's worth looking into. You'll learn more about OS/2 and also meet some nice people! Here's a list of the clubs around the country and the world.

If you're thinking of starting an OS/2 user group or SIG, or are trying to find an OS/2 user group in your area, you can get help from IBM. You can contact them at the following address:

Kathy Fanning
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Dick Conklin joined his first computer club in 1970, a group of people who wrote Greek-like programs in A Programming Language (APL). As an IBM marketing representative, his club activity helped him to find prospects for the APL-based IBM 5100 Portable Computer. Today, Conklin is the editor of OS/2 Developer magazine.

Table 1: U.S. OS/2 User Groups and Special Interest Groups, alphabetically by state and city. Information provided by IBM PSP User Group Relations.

Alaska Computer Society, OS/2 SIG P.O. Box 240945 Anchorage, AK 99524	Inland Empire OS/2 Users Group (IEOUG) c/o Scot Gould, Keck Science Center 925 North Mills Ave Claremont, CA 91711	North Orange Cty Computer Club, OS/2 SIG P.O. Box 3616 Orange, CA 92665	Los Angeles OS/2 User Group c/o Paul Duncanson Jr 3008 Texas Ave. Simi Valley, CA 93063
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Sierra Vista IBM PC UG, OS/2 SIG c/o Kevin McCrory 4931 Loma Loop Sierra Vista, AZ 85635	San Diego OS/2 User Group c/o Craig Swanson P.O. Box 13346 La Jolla, CA 92039	San Francisco OS/2 Users Group c/o Bob Barber, AOSI 250 World Trade San Francisco, CA 94111	Old Colorado I/S OS/2 Users Group 2423 Hagerman St. Colorado Springs, CO 80904
Tucson Computer Society, OS/2 SIG c/o John Aucott P.O. Box 1489 Tucson, AZ 85702	Long Beach IBM Users Group, OS/2 SIG 4176 Woodruff Ave, Suite 517 Long Beach, CA 90713	San Jose IBM Club PC Club, OS/2 SIG c/o Chris Martin (F63/099) IBM AdStaR 555 Bailey Ave San Jose, CA 95141	Rocky Mountain OS/2 User Group c/o Robert Saenz, IBM Corporation 4700 S. Syracuse Denver, CO 80237
Orange County IBM PCUG, OS/2 SIG P.O. Box 1779 Brea, CA 92622	Greater South Bay PCUG OS/2 SIG c/o Fred Zimble 355 S Grand Ave, 22nd Flr Los Angeles, CA 90071	OS/2 User Group c/o Gerald Brown World Savings and Loan 794 Davis St San Leandro, CA 94577	Danbury Area Computer Society, OS/2 SIG 12 Noteworthy Dr. Danbury, CT 06810
Channel Islands PC Users' Group OS/2 Corner P.O. Box 1213 Camarillo, CA 93011	Bay Area OS/2 User Group c/o Guy Scharf, Software Arctcs. Inc. 2163 Jardin Dr Mountain View, CA 94040		New York OS/2 Users Group c/o William H Zack & Associates 156 Hulls Highway Southport, CT 06490

New England OS/2 User Group

c/o Ron Beauchemin,
ABB C-E Services Inc.
200 Great Pond Dr.
Windsor, CT 06095

South Florida OS/2 User's Group

c/o Doug Azzarito
2399 NW 30th Rd.
Boca Raton, FL 33431

Pinellas IBM-PC Users Group, OS/2 SIG

c/o Michael C Grogg
1510 Barry St., #J-2
Clearwater, FL 34616

Space Coast PC Users Group, OS/2 SIG

P.O. Box 369
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c/o Melissa Woo,
Dept. of Physio & Biophysics
524 Burrill Hall, 407 S. Goodwin Ave
Urbana, IL 61801

Fort Wayne OS/2 Users Group

c/o Stephen Gutknecht
3724 Shannon Dr.
Fort Wayne, IN 46835

Indianapolis Computer Society, OS/2 SIG

P.O. Box 2532
Indianapolis, IN 46206

Kentucky-Indiana PCUG, OS/2 SIG

P.O. Box 3564
Louisville, KY 40201

Baton Rouge OS/2 User Group

c/o David Arbour
6333 Feather Nest Lane
Baton Rouge, LA 70816

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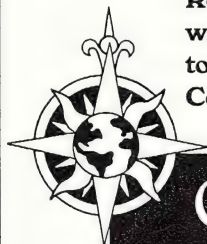
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will have to grow when you boot.) Usually, when the system boots up, the swap file starts growing very quickly. Enlarging the file is a more expensive operation than simply creating a larger file at the outset. Therefore, you should create a larger swap file initially. You may just tell it that you have a lot of disk space, so you can create a really huge swap file. That method may work if you have a big disk, but you must also understand that the initial size of the swap file is also the smallest it will ever shrink to, so unless you have a great deal of extra disk space, you need to make a good estimation of how much you'll need.

The best thing to do is to run your system in a normal manner, and periodically examine the swap file. Take the average size it gets to under normal operation and round it up to the nearest megabyte (unless, of course, you are very tight on disk space, in which case you may want to round it down). Use that number as your initial swap file size. Now you will create a swap file of about the size you will need from the outset, and the system will not often have to spend resources expanding and shrinking it.

MOUSE SPEED

Q: I don't like how fast the mouse scurries across the screen when I move it on my desk. I want finer control. How can I do this?

A: You can control many aspects of the mouse, not the least of which is the tracking speed, as it is called. To change these settings, open up the OS/2 System folder, then the System Setup folder. Now open the Mouse object and view the settings. The first page you see

is the Timings page. There is a slider to change the tracking speed. The change takes effect immediately, so you can tune it to your liking before closing the settings. Using this same settings notebook, you can also change the mouse double-click timing sensitivity and, if you don't want the system defaults, you can customize your mouse with the Mappings page to react differently to buttons one and two, and clicks and double-clicks. You can also use the Setup page to change from a right to a left-handed mouse.

MIGRATING PROGRAMS

Q: What does *MIGRATE* do?

A: *MIGRATE* really does nothing to your application programs. Its purpose is to read the migration database (*database.dat* in the \os2\install directory on the boot drive), search the specified drives for programs that are in the database and, when confirmed by the user, create program reference objects for them, using the settings specified in the database.

MIGRATE relieves you from having to manually set up program reference objects, then having to either look up or learn the optimal settings for them and set them manually.

The database supplied with OS/2 version 2.1 contains entries for 611 programs. You can create your own database or enhance the one provided by IBM.

The \os2\install directory also contains a tool called *parsedb*. This tool is used to take the IBM-supplied *database.txt* file and turn it into *database.dat*, which is readable by *MIGRATE*. You can edit *database.txt* and add new programs to it or examine the format of the file

and create a database of your own. Once you've created the text file, you run *parsedb* against it to generate the new database. Now you can *migrate* programs that are not in the default database to your workstation(s).

DETECTING HANGS

Q: I've heard that an application can sometimes make the system appear to hang, when in fact it's just hogging the user interface input subsystem. How can I tell the difference?

A: If you think your system is hung (or an application is hogging the input queue), there are two simple tests. If you hit <Ctrl-Esc> a few times and do not see either the Window List or a window telling you an application is not responding to system requests (make sure to wait about 30 seconds or so), the system may be hung up. You should also try pressing the <NumLk> key and see if the <NumLk> light goes on or off. If it does, you can get a clean file system shutdown using <Ctrl-Alt-Del>. If not, then you must power down the system and let it go through *chkdsk* when it restarts.

If you would like to report this problem to OS/2 Technical Support, you can take a stand-alone system dump by inserting a diskette created with the system-provided *createdd* utility, and pressing <Ctrl-Alt-NumLk-NumLk> (hold down <Ctrl> and <Alt>, then while holding them, press <NumLk> twice). This will dump the contents of system memory to a number of additional diskettes (approximately 15 for a 16MB machine). You can send these to OS/2 Technical Support for diagnosis if it is a recurring problem.

SPOOLER PRIORITY

Q: I use a lot of communications programs concurrently that usually work well together. However, when I print while these programs are running, the communications lines get flaky and sometimes drop. I thought OS/2 was prioritized and preemptive. What's happening?

A: OS/2 is indeed prioritized and preemptive. What you are probably seeing is a contention for the hard disk. If your communications programs are also disk-intensive (needing to read or write to the disk while the communications are going), you may wind up with a situation where, although the print spooler is not getting nearly as much time as those time-critical communications programs, it makes requests of the disk. These requests arrive in some order and, if it so happens that a spooler-generated request is in front of one of these communications programs' disk requests, the communications program may have to wait. While there is no easy way to preempt or reorder disk requests, IBM created a spooler setting to help out.

If you open the OS/2 System and then the System Setup folders, you will see a Spooler object. Open it and you will see a page for Priority. By lowering the priority of the spooler, you are not so much rearranging the disk requests, but making it so that the spooler will get fewer time slices and, therefore, the disk requests it makes will be fewer and farther between. This way, it won't get in the way of the communication programs' disk requests as often. Printing is a background task anyway, so slowing it down a little bit to make your primary tasks more reliable is an

easy thing to swallow.

CUSTOM ICONS

Q: I want to use an icon from one program on another. I know I can edit it and save it again with the icon editor, but isn't there an easier way?

A: Sure is. If you open the settings for an object and go to the general page, you will see the current icon for that object. With that settings notebook open, go over to the folder containing the icon you want to use, click on the icon with mouse button two (the drag button) and while holding it down, drag the object over to the settings page, over the current icon for the object you want to change. Now, release the mouse button and drop it there. You've just changed the icon for that object. If you change your mind, you can click on the Undo button before closing the settings notebook.

MULTIPLE INSTANCES

Q: I have occasion to open several instances of the same object. (I like a lot of different command prompts) But having all of these objects all over the desktop is getting messy and I don't want to stick them in other folders.

A: You don't need to have a sepa-

rate object for each OS/2 Command Prompt. You can set up an object to open a new instance each time it is double-clicked.

Open up the settings for the object by clicking on it with button two to bring up the context menu, then use button one to select the arrow next to Open, and select Settings with button one. Now use button one to select the Window tab. On that page, there is a box titled "Object open behavior." The default selection is to "Display existing window." Click on "Create new window." Now, close the settings notebook.

Each time you now double-click to open the object, a new instance will be created. If none are open, one will be. On subsequent opens, new instances will be created. Note that now you will not be able to double-click on the object to bring it to the foreground. This action will now open a new instance, so you will have to get to an existing one either by looking for it in its minimized state, by seeing it obscured by other windows, or by using the Window List.

David Reich has been with the OS/2 development team since 1987. He has written numerous articles for OS/2 Developer and is the author of Designing OS/2 Applications (Wiley and Sons, 1993). Questions can be addressed to David via Compuserve at 76711,632 and via the Internet at speedracer@vnet.ibm.com.



News you can use

SWAP FILES, MIGRATION, MOUSE SPEED, AND MORE BY DAVID REICH

Last month, we discussed the swap file at length and since then, I've received many questions about how to tune the swap file. There's not a lot the end-user can do to tune the swap file. However, by understanding what happens when the system boots and when the swap file grows and shrinks, you can choose parameters for *config.sys* that can help you.

When an OS/2 system starts, the swap file is allocated. The system initialization routines see the SWAPPATH statement and use the values specified to create the file and set the thresholds. The SWAPPATH statement looks something like this:

```
SWAPPATH=C:\OS2\SYSTEM 2048 4096
```

The first parameter *c:\os2\system*, is where the swap file *swapper.dat* will be placed. You can choose where the swap file will be placed during system installation or by editing *config.sys* and changing the SWAPPATH statement later on. Be aware that any *config.sys* changes do not take effect until the next boot. (Once you change the location of *swapper.dat*, you can remove any old ones because, when you make the change in *config.sys* and reboot, the one in the previous location will not be deleted.)

Where should you put the swap file? The default as offered by OS/2 System Installation is in the

\os2\system directory of the boot drive. A good place to put the swap file is the root directory of the most-used partition of the least-used physical drive. This procedure requires a little explanation but is relatively simple.

The goal is to try to have the disk drive head over the swap file as often as possible. By placing the swap file in the root, you are helping slightly because there are no directories to traverse during start up. This, in and of itself, is no great gain; the greater performance benefit is achieved by moving it to the most often-used logical partition of the least-used physical drive. By using the most often-used partition, you are creating a better chance that the drive's head will be over that partition, thus minimizing the amount of head movement over the disk to get to the swap file. This is also the reason for using the least-used physical drive. By combining the least-used drive with the most often-used partition on the drive, you are using a combination that is more likely to bring the head closer to the swap file than if you used a more often-used partition on a more often-used drive. Since that drive is more active, the head may well be further from the file than you would like. If you have only one physical hard disk, then it should be on the most often-accessed partition.

Now that you see where to place the file, what are the optimal initial

size and **minfree** numbers? Recall from last month that the **minfree** number is the amount of disk space the swapper will not go into when the file grows. For example, if the **minfree** is 4096 and the user creates or copies files such that there are only four megabytes left on the disk, the swapper will refuse to grow the swap file.

The **minfree** number is not as much a performance factor as it is a safety factor. Too small a number may cause you to hit the end of your disk, causing a hard stop. Too large a number will cause you to run out of swap space, effectively limiting the amount of virtual memory you can use. Try to reach a compromise. If you are tight on disk space and need to retain as much as possible for programs and data, then you will need to raise the **minfree** number. If you have lots of disk space, you may want to make it just 2048 or 4096. The choice is really based on how much memory you have in the system, and how much you intend to use, versus the amount of available disk space.

The initial swap file size is the place you can gain the biggest performance benefit. When you install OS/2, the installation program reads the amount of memory that is in your system and sets this number (the 4096 in the example above) accordingly. (The more memory you have, the smaller the number, and the less chance that it

continued on p.82

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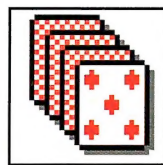
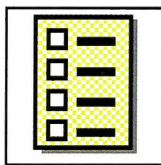
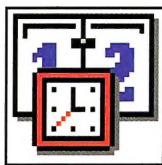
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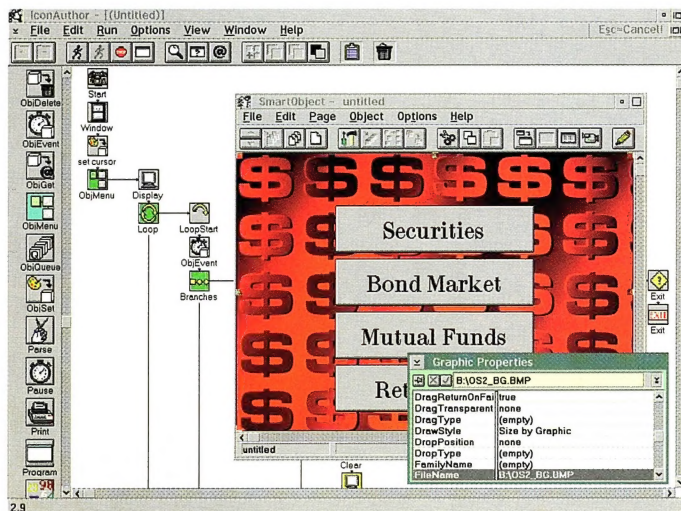
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